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VOL. III, No. 4

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# THE ORAIBI SUMMER SNAKE CEREMONY

BY

H. R. VOTH

Department of Anthropology

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UNIVERSITY OF ILLINOIS

THE STANLEY McCORMICK HOPI EXPEDITION

GEORGE A. DORSEY

Curator, Department of Anthropology



CHICAGO, U. S. A.

November, 1903

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ANTHROPOLOGY, PL. CXLVIII.

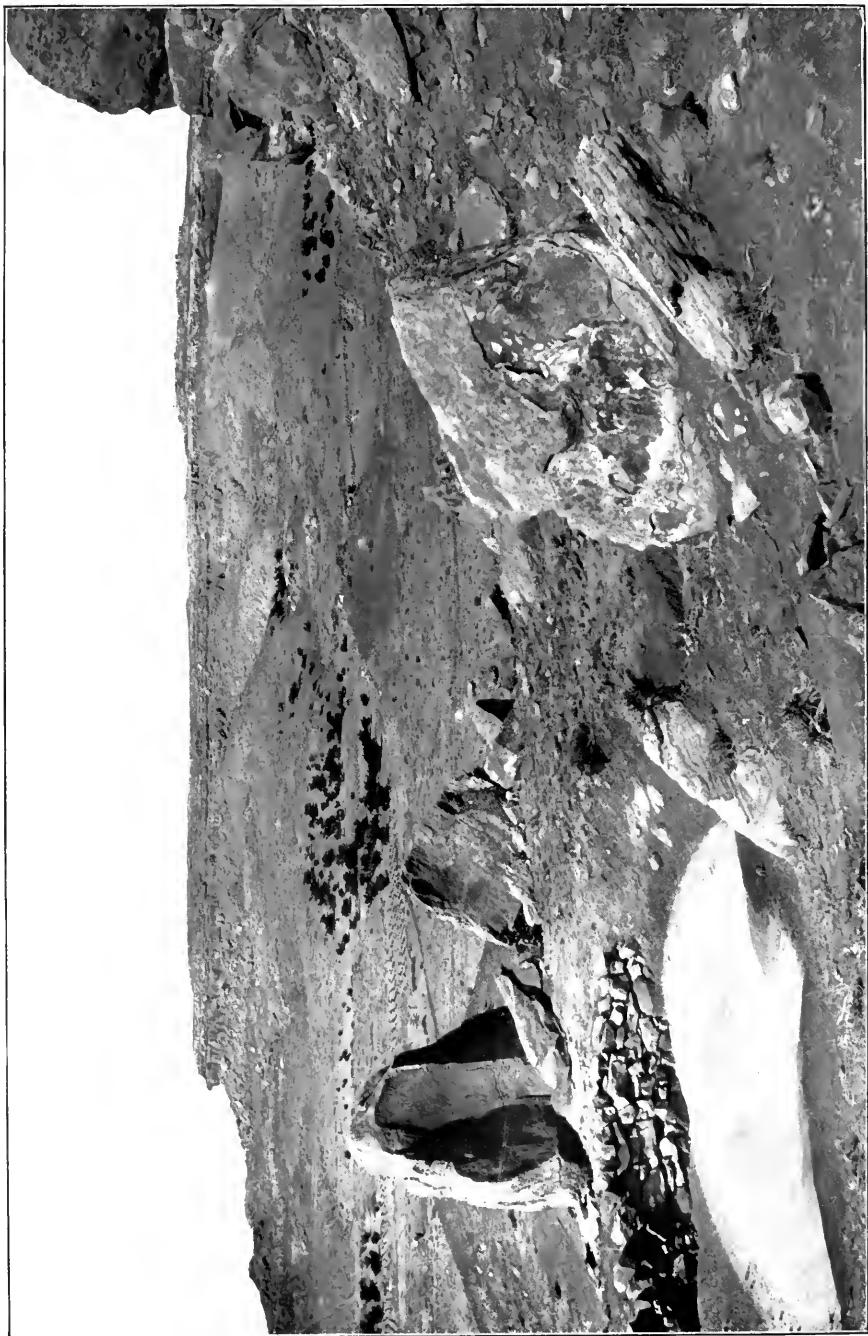


Photo by Sumner W. Matteson

PL. CXLVIII. (FRONTISPICE). THE THIRD MESA WITH ORÁIBI.

The view is taken from the east; the distance is about one mile. In the foreground may be seen to the right the beginning of a mesa, to the left and in the centre peach orchards and bean patches. In the background is the mesa, which is about four hundred feet high, and on the top of which, somewhat to the right, is perched the ancient village of Oráibi, the largest of the seven Hópi villages, with a population of about eight hundred people. In the centre of the picture may be seen, meandering through sand hills, orchards, fields, and up the mesa, the principal trail to the village, which, for generations, has been used by the water-carrier to springs, by the priest to distant shrines, by the tiller of the soil to his little fields in the valley, and by the visitor to the neighboring villages of Tusayan, and to the distantly located ones of the befriended Pueblo and Zuni Indians.

En la otra parte de la noche se escuchó un golpe en la puerta y el perro se puso a ladrar. La señora se levantó y abrió la puerta. Un hombre de mediana edad, vestido con una camisa blanca y pantalones negros, entró sin esperar permiso. La señora lo miró con sorpresa y preguntó:

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## THE ORAIBI SUMMER SNAKE CEREMONY

BY

H. R. VOTH



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## NOTE.

The paper here presented on the Oráibi Snake and Antelope Ceremonies, by Mr. H. R. Voth, is in continuation of the series of publications begun in 1901, by Mr. Voth among the Hopi, under a liberal provision made by Mr. Stanley McCormick, to whom the gratitude of this department and the Museum is herewith cheerfully acknowledged.

GEORGE A. DORSEY,

*Curator, Dept. of Anthropology.*

CHICAGO, November, 1903.



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**PL. CXLIX. THE VILLAGE OF ORÁIBI.**

This view is taken from the south-west. In the foreground may be seen a few burro corrals, and to the left one of the principal trails. It leads to the fields that are located south and south-east of the village, to the shrine of Spider Woman, frequently mentioned in this paper, and over this trail the Snake priests leave the village when they go to hunt snakes south of the village, and also those who take the snakes south from the village after the public performance on the ninth day.



## PREFACE.

Of the many rites and performances in the Hopi ceremonial calendar, none is perhaps better known—in a general way—than the Snake ceremony. This is not to be taken as evidence, however, that the Snake celebration is the most important of all the Hopi ceremonials, because there are others that are more complicated and play a greater part in the ceremoniology of the Hopi than the Snake ceremony. But the fact that no other rite is attended by such a sensational public performance as may be witnessed in the “last act” of the Snake ceremony, in the so-called “Snake dance,” is the reason that has brought this celebration to the foreground and that it has been witnessed by far more white people than any other Hopi ceremony.

In Oráibi, as well as in the other Hopi villages, this “Snake dance” is preceded by a preliminary ceremony which takes place sixteen days before and by a nine-day ceremony which commences eight days before the Snake dance. These secret ceremonies have thus far been witnessed, as far as Oráibi is concerned, by very few white people.

On the First and Second Mesas, Dr. J. W. Fewkes, of the Bureau of Ethnology, Washington, has made extensive studies not only of the Snake, but of other ceremonies. In Mishóngnovi the Snake ceremony has been observed throughout by Dr. G. A. Dorsey and the author of this paper, and the results of these last-named studies have been published in a special monograph by this Museum.

On the Third Mesa, on which Oráibi, the largest Hopi village, is situated (Pl. 149), no white person had ever been permitted to witness the secret part of the Snake ceremony until the writer of this paper gained admittance in August, 1896. He has since then been permitted not only to witness the ceremony in the different years, but also to take full notes and pictures, and make sketches, etc. On a few occasions he has obtained the permission of the priests to admit a few others to the kíva rites for short periods, one of them being Dr. P. Ehrenreich of Berlin, Germany; but the entire ceremony and the preliminary ceremonies have unfortunately never been studied by any one but the author, and while he does not claim that his studies are exhaustive and complete, they are perhaps nearly so, and hence he accedes to the requests to publish the result of his observations, that have repeatedly been made by ethnologists and others.

Besides the Summer Snake ceremony, which is the one usually meant when the Hopi Snake dance is mentioned, there exists a Winter Snake ceremony, which also lasts nine days and is celebrated in January of the same year in which the summer ceremony is celebrated. This winter celebration, however, has thus far been studied only partly. It may be stated in a general way that this winter ceremony does not differ essentially from the summer celebration. The same kivas are used, the same altars put up, the same songs chanted as far as observed, etc. But no snakes are used, and instead of the public performance by the Snake and Antelope Fraternities on the ninth day, a Katcina dance usually takes place. These two ceremonies always take place in Oráibi in the years of even numbers. In the years of uneven numbers a one-day ceremony takes place, called "Báholawu" (*báho* making). This one-day celebration<sup>1</sup> is practically the same as the Báholawu that precedes the Snake ceremony, and which is fully described in the following pages.

The summer ceremony herein described was observed three times—in 1896, 1898, and 1900—and the fact that the author speaks the language of the people enabled him to obtain his information, aside from what he personally saw, from the priests direct, and without the aid of an interpreter. This and the fact that these observations were, at least to a large extent, based upon the personal confidence these people had in the author, it is hoped, will compensate for any lack of completeness in these notes.

<sup>1</sup> A paper on the different one-day ceremonies in Oráibi is in preparation.



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ANTHROPOLOGY, PL. CL.

A



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B



Photo by H. R. Voth.

PL. CL. TWO CHIEF SNAKE PRIESTS.

- A. Kūktiwa.
- B. Macángöntiwa.





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B



ANTHROPOLOGY, PL. CLI.

Photo by Sumner W. Matteson.

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**PL. CLI. TWO CHIEF SNAKE PRIESTS.**

- A. Pəhənōmtiwa.
- B. Sikáhongniwa.



## INTRODUCTION.

The Snake ceremony takes place in Oráibi, as in the other villages, every other year, alternating with the great and complicated Flute ceremony. The number of participants, however, has in later years been smaller than in the other villages. This is due to the fact that a part of the members of the Snake Fraternity in Oráibi belong to the conservative or hostile faction (so-called because they are opposed to schools, building of American houses, etc.), and a part to the faction that are friendly to the Americans and take kindly to the plans of the Indian Department. The relation between these two factions is of such a nature that they will very seldom co-operate in a ceremony. For instance, the leaders and the sacred paraphernalia of such Societies as the Soyál, Powámu, Oöqöl, and others, belonging to the liberal party, only very few of the conservatives will participate in any of those ceremonies; while, on the other hand, very seldom a liberal will take part in such ceremonies as the Blue Flute, Snake, etc., which are controlled by the conservative faction. Not a single member of the liberal faction has participated in the Snake ceremony in Oráibi for the last ten or twelve years. This applies to both Fraternities, the Snake and the Antelope, with the exception that in 1900 one young man, belonging to the liberal faction, was one of the participants in the Antelope kíva.<sup>1</sup>

These observations were made under two different Chief Snake priests, twice under Macángöntiwa (see B, Pl. 150) and once under Pühünömtiwa (see A, Pl. 151), who acted as chief priest for the first time in 1900. There are at present four Chief Snake priests living in Oráibi: Kúktiwa (see A, Pl. 150), who lost his position when the rupture occurred between the two factions, and he identified himself with the liberal faction; Macángöntiwa, who incurred the ill will of the Antelope priest and had a quarrel with him, that led to his disqualification as chief priest and even as participant in the ceremony of 1900; Pühünömtiwa, who acted as chief priest in that year, but on account of a quarrel with his wife was considered unworthy to do so in 1902; and Sikahongniwa, one of the older priests, who was installed as chief priest for the ceremony in the last-named year. (See B, Pl. 151.) It remains to be seen who will act as chief priest in 1904, but in all probability,

<sup>1</sup> For further explanations on this point see Introduction to "The Oráibi Soyál Ceremony," Vol. III., No. 1, published by the Museum.

Pūhánömtiwa, who, under normal circumstances, will also retain the office permanently.

### TIME OF THE CEREMONY.

The Snake ceremony takes place in every alternate year in the villages of Oráibi, Shongópavi, Shipaúlovi, Mishóngnovi, and Wálpi; in the first three in the years of even, in the last two in the years of uneven numbers. The date of a Snake ceremony is partly regulated by the Nimán Katcina (Departing Katcina) ceremony in July, the preliminary Snake ceremony usually taking place on the fourth day after the public Nimán-Katcina dance. This rule, however, is not without exceptions. The condition of the crops (especially of the melon crops) and other matters enter into the consideration of the date. If the drought is very great and the crop suffers, the ceremony is sometimes somewhat hastened; if such is not the case, a few days are sometimes given the melon crop to mature a little better. In 1898 the drought was severe, and when the Snake priest still delayed the announcement of the ceremony considerable uneasiness was manifested in the village, and pressure was brought to bear on the old priest to hasten the ceremony and thus to secure for the perishing crop the much needed rain. The following table shows the dates of the Snake ceremony in Oráibi from the year 1896:

- In 1896, from August 11 to August 19.
- In 1898, from August 14 to August 22.
- In 1900, from August 11 to August 19.
- In 1902,<sup>1</sup> from August 18 to August 26.

The principal ceremony, which lasts nine days, is preceded by a preliminary ceremony, which will be described in a special chapter. This takes place nine days before the first day of the principal ceremony, not counting this first ceremonial day; so that, for instance, in 1896 and 1900 it took place on the 2d, in 1898 on the 5th, day of August.

### THE PRELIMINARY CEREMONY (BÁHOLAWU).

As so few of the preliminary Hopi ceremonials have thus far been observed and still fewer have been described in print, it has been thought best to describe each of these ceremonies separately.

<sup>1</sup> The ceremony of 1902 was not observed, as the author was absent from Oráibi, and no one, I understand, was allowed to witness any of the secret ceremonies.



A



B



**PL. CLII. VIEWS IN ORÁIBI.**

- A. The ancestral home of the Spider clan.
- B. A Crier making an announcement.



## 1.—BÁHOLAWU OF 1896.

This took place on August 2d. Early in the morning of that day the following men assembled in the house which is considered as the ancestral home of the Antelope Fraternity, or rather of the Kóhkang Wúhti (Spider Woman) clan (see A, Pl. 152):

Tobéngötiwa,	Chief Antelope priest.
Sihongwa,	Antelope member.
Kiwáhnoya,	Antelope member.
Mošáhtiwa,	Antelope member.
Macángöntiwa,	Chief Snake priest.
Puhúnömtiwa,	Snake member.
Nuwákwháhū,	Snake member.
Sikáhongniwa,	Snake member.

The place where the priests assembled was a room in the second story of the house. The two chief priests brought with them some pipes, tobacco, plume boxes, sticks, paint, and twine for making báhos, corn-meal, etc. Some of the men also brought some meal and feathers. All first smoked a while and then went to making báhos and nakwákrosis. Of these the following were made, as far as I could ascertain:

1. By the Chief Antelope priest: Four double, green báhos; four nakwákrosis, stained red; and one púhu.
2. By the Chief Snake priest: Three double, green báhos; four nakwákrosis, stained red; and one púhu, stained yellow.
3. By the other men: Six nakwákrosis by each man.

As soon as these prayer offerings were finished they were placed on a tray and then all smoked, blowing the smoke towards the tray. A considerable quantity of sacred meal was then put on the prayer offerings, whereupon they were deposited at various places. I could, of course, only go with one party, but was—reliably, I believe—informed that these prayer offerings were disposed of as follows: The Snake priest sent one man north to the shrine of Achámali and one man to an unidentified place west of the village; each messenger taking with him one of the chief priest's báhos and one nakwákrosi from each man. The Antelope chief priest sent one man to Lánva,<sup>1</sup> a large spring west of the village, another out to the east side of the village, each man taking one of his (the chief priest's) báhos and also a nakwákrosi from each man. The Chief Antelope priest, who is a member of the Kóhkang Wúhti (Spider Woman) clan, takes his remaining báho, the four red nakwákrosis, the road, and one nakwák-

<sup>1</sup> The Flute Society also have extensive ceremonies at the spring during their ceremonies.

wosi from each man to the shrine of Spider Woman, where he deposits them. (See Pl. 153.) The one remaining báho, the four red nakwák-wosis, and the road, made by the Chief Snake priest, are placed on a tray and taken by the Snake chief to the house of the chaákmongwi (crier; lit., crier chief), where it remains during the day. The present incumbent of that position is Taláswungvnima, the brother-in-law of Macángöntiwa. In the evening the following men are supposed to assemble again, but this time in the house of the kíkmongwi<sup>1</sup> (chief of the houses) so called because he is considered to be the owner of the houses:

- The Chief Snake priest, of the Snake clan.
- The Assistant Snake priest, of the Snake clan.
- The Kíkmongwi, of the Badger clan.
- The Crier, of the Reed clan.

This little ceremony in the kíkmongwi's house is called "tíhtingapya," and is here described as a participant in the ceremony gave it to the author, as it was not observed by him personally. My informant says: "The tray with the one báho, four nakwák-wosis, and one púhu that was taken to the crier's house in the morning is placed on the floor and all present squat down on the floor around it. The kíkmongwi then fills a pipe, smokes, and then hands it to the shúngva (assistant) of the Snake chief, who also smokes, handing the pipe to the crier and he to the Snake chief. Hereupon the assistant takes the tray, holds it before himself, and says the following words, which may be considered a prayer:

"Pai hápi ítam yep ímui nálönang mómgwitu itánamu ámungem yáyüha. Hápi ówi yáhpi it akw móngwacyakáhkango ka hakámi tíwi 'wisht, ich itámui pálayi akw itámui ókwatotwani. Púu hápi kush óvi káwuu wíhpinen shúhkop tálat épák íma Teútcütū, Tcótcoébtu kuwánāw unángway tawiyaniqáy pasiónaya. Ówi yáhpi ítam ka nánamahin unángwaykahka yéshwani. Nap hákakwat móngwit yóiloki akw itámui ókwatotwaqö; put akw ítam móngwactotini. Pai ówi ítam yan hákam túnátyaokahkang, pai hálhaikahkang öökáokahkang yáhpi yéshwani! Shópkakawat sínomu pai hálhaikahkang, öökáokahkang yáhpi yéshwani."

#### TRANSLATION.

Now we have for these different chiefs (the Cloud Gods), our fathers, prepared (or dressed up) these prayer (offerings). Therefore, being provided with these, do not delay anywhere, but quickly

<sup>1</sup> Since the present kíkmongwi belongs to the liberal faction, these leaders of the Snake and Antelope fraternities who belong to the conservatives hold this night assembly generally in the Antelope kiva.



**PL. CLIII. SHRINE OF SPIDER WOMAN.**

The shrine is located south-west from the village, about half-way down the mesa. A number of prayer-offerings may be seen in the shrine, and in front of it the chief Antelope priest in the act of depositing others.

Photo by G. Wharton James.





have pity on us with rain. Now then, therefore, sixteen days after to-morrow then these Snakes and Antelopes, if they have a good heart, will celebrate or will agree on this (ceremony). Hence from now we must not live at variance with each other (and be troubled).<sup>1</sup>

If (perchance) some chief (cloud) with dropping rain have pity on us and on that (by means of that) we subsist. Now, therefore, we thus here from now (or henceforth) being concerned (about this), being happy, being strong—shall (continue to) live. All people shall henceforth live, being happy, being strong.

The assistant then hands the tray to the kíkmongwi who, my informant says, repeats, practically the above talk, adding, however, some words. This talk my informant did not know by heart. The kíkmongwi hands the tray to the crier and he to the Snake chief, both of whom say essentially the same words as those already recorded, adding, however, some words of their own, my informant says. When all have prayed the smoking is repeated, as already described, and the ceremony is over.

The crier now takes the tray to the ancestral home of the Pákab Nyamú (Reed clan), where it remains over night. Early the next morning the crier takes the tray, ascends to the roof of the house from which the announcements of approaching ceremonies are made,<sup>2</sup> deposits the prayer offerings contained in his tray in a small shrine that is situated on that roof, and then makes the announcement of the approaching Snake ceremony in the following words: (See B, Pl. 152.)

Úma kwiníwui kiyungkamu káküwa hūwamú! tawāngae kiyungkamu káküwa hūwamú! tátöö kiyungkamu káküwa hūwamú! hópoo kiyungkamu káküwa hūwamú! Hápi kush yáhpinen shúhkop tálat épák ima Tcútcútu, Tcōfcóptu kuwánav unángway tawíyanigāq pasiónaya. Ówi pássa tálat akv, itam ka nánámahin unángwaykahkango yéshwaqö; yan nap hákakwat móngwit yóilöki akw itámui ókwatotwaqö put akw itam yep móngwactotini.—Móngwactotiniqö túnátyaokahkango yáhpi yéshwani.—Shópkawat sínom pai háhlaikahkango, öokáokahkango.

#### FREE TRANSLATION.

You who live north, loom up, please! (You), who live west, loom up, please! (You), who live south, loom up, please! (You), who live east, loom up, please. Now then, after this, in sixteen days, these Snakes, Antelopes, if they preserve a good heart, will conclude this.

<sup>1</sup> The word in the Hopi is very comprehensive; it may mean worry (but with the idea that such worrying is detrimental to others), quarrel, be at variance, etc.

<sup>2</sup> This house is the ancestral home of the Kéi Nyamu (Sparrow Hawk) clan, and of the Drab Flute Society, whose altar paraphernalia are here kept.

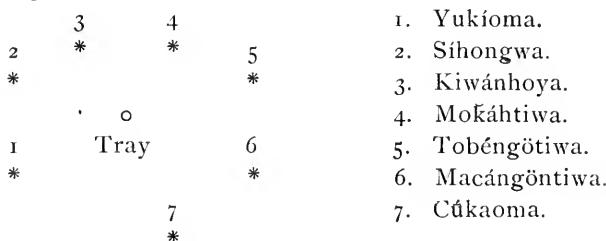
Hence that many days may we live not having any trouble with each other. Thus some chief may pity us with some dropping rain. On (by) that we shall subsist. Being concerned that they may subsist they shall live. May all the people live happily, strongly, or encouraged.<sup>1</sup>

## II.—BÁHOLAWU OF 1898.

This preliminary ceremony took place on August 5th, sixteen days before the public Snake ceremony. I was up in the village at about four o'clock in the morning, but found all whom I expected to participate in the ceremony still in bed. About three-quarters of an hour later, however, the Chief Antelope priest, Tobéngötiwa went to the house of his niece, the ancestral home of the Spider clan. The woman of the house had already cleared and swept an upper room in which Tobéngötiwa at once commenced to make báhos. About fifteen minutes later the Chief Snake priest, Macángöntiwa, came in, took off his moccasins, loosened his hair, and then also began to manufacture báhos. Soon other men came in, so that the following men participated:

Tobéngötiwa,	Chief Antelope priest.
Moñáhtiwa,	Antelope member.
Kiwánhoya,	Antelope member.
Sihongwa,	Antelope member.
Yukíoma,	Antelope member.
Macángöntiwa,	Chief Snake priest.
Cúkaoma, <sup>2</sup>	Snake member.

The position of these men during the ceremony is shown in the following diagram:



While the two chief priests made báhos the others silently waited, except Cúkaoma and Kiwánhoya, who also made one báho each. The

<sup>1</sup> The peculiar construction of the sentences, and the fact that several of the words may mean different things and the first, second, or third person are the same, makes the last part of the speech somewhat obscure.

<sup>2</sup> Unfortunately this participant is not named in my notes, but my recollection is that it was Cúkaoma.

woman of the house was sent on different errands, after a paint mortar, turkey feathers, etc. She also shelled a few ears of white corn and ground the same into meal to be used in the ceremony.

It was noticed that those who made báhos took a small quantity of honey into their mouths as soon as they had finished cutting the sticks for the báhos, spat it into their hands, and then rubbed their bodies with their hands. The paint for the báhos was prepared by Tobéngötiwa. It was also noticed that in painting the tips of the báhos always the two sticks (male and female) belonging together, were taken up and held in the hand together while the tips were painted black. When the báhos were about finished all made a number of nakwákrosis, so that when all were done the following prayer offerings had been made: By Tobéngötiwa, four double, green, black-tipped báhos, about four and one-half inches long and eight púhus (roads); Moķáhtiwa, six red<sup>1</sup> púhus and two yellow<sup>1</sup> ones; Kiwánhoya, one báho like Tobéngötiwa's, two yellow púhus and eight red nakwákrosis; Síhongwa, two yellow púhus and five red nakwákrosis; Yukíoma, seven yellow púhus and seven red nakwákrosis; Macángöntiwa, two double báhos (each with one black and one green stick) about five inches long, two yellow púhus and five red nakwákrosis; Cúkaoma, one báho (like Macángöntiwa's, but a trifle shorter), two yellow, and seven red púhus.

The twine and a part of the feather of the nakwákrosis on all the báhos was stained with cútá, a red mineral paint.

When all were through making their báhos, nakwákrosis, etc., these prayer offerings were placed on the tray in the following order: Tobéngötiwa, one báho and one yellow púhu, each towards the north, west, south, and east, one báho and the balance of the púhus towards the south-east; Macángöntiwa, one báho north, one west, two púhus south-west, and the five red nakwákrosis he distributed towards the south, east, and north-east; Cúkaoma, one báho north, two yellow púhus south-west, and the red púhus, he distributed to the different points, but just how I could not record, as several were distributing at the same time; Kiwánhoya, báho north, the two yellow púhus south-west, and the red nakwákrosis to different points, but just how, I could not keep track of; Síhongwa, the yellow púhus to the south-west, the red nakwákrosis to the different cardinal points; Yukíoma placed his somewhat differently, but I could not follow closely. He put none towards the north-east, this may have been due, however, to the fact that Yukíoma participated in this ceremony for the first time.

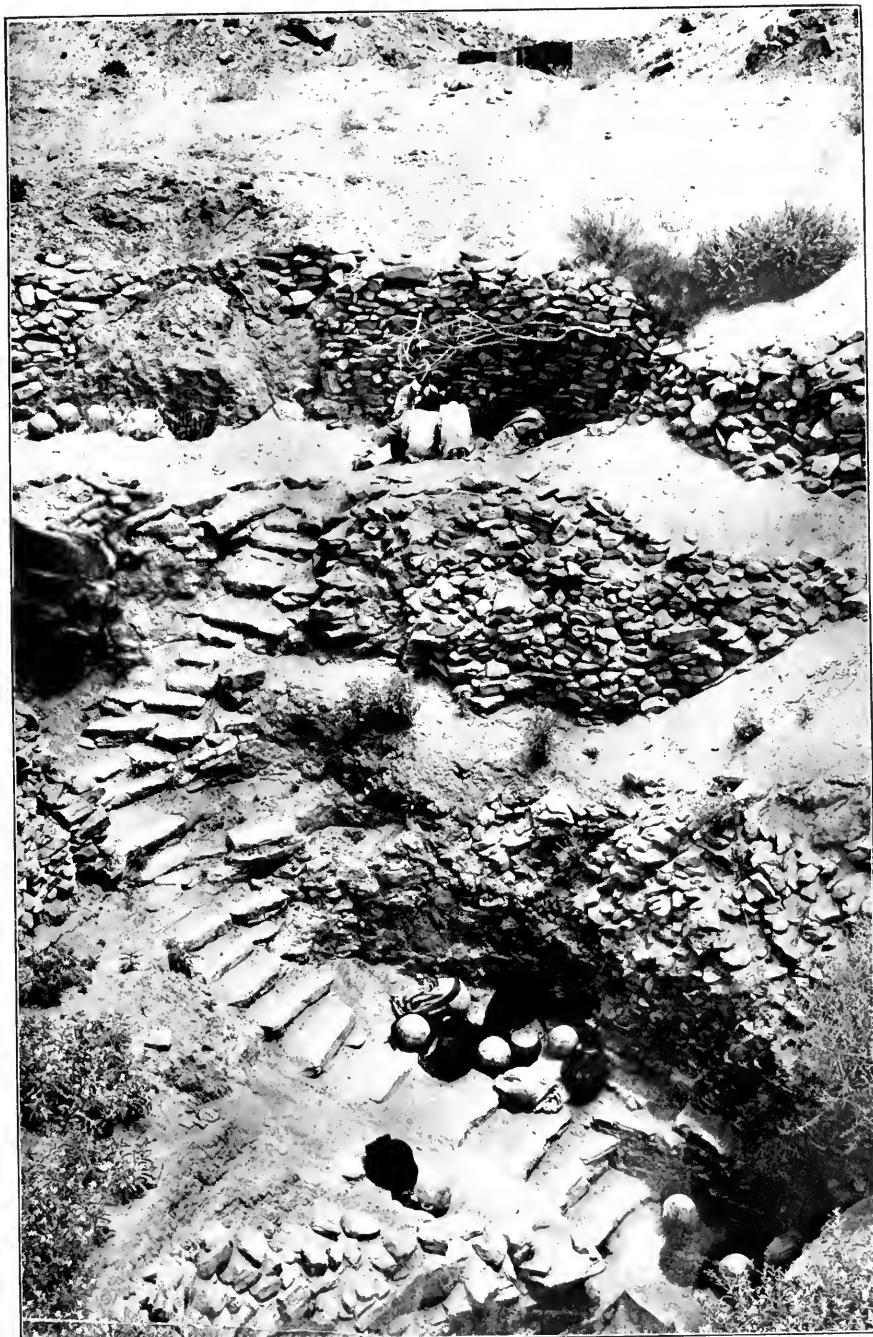
<sup>1</sup> The terms red and yellow mean here that the strings and fuzzy part of the feathers of these prayer offerings were stained with these respective colors.

It was now about a quarter past seven o'clock. Mōkáhtiwa, who acted as pípmongwi (tobacco priest or chief) lit a pipe at the fireplace, smoked a few puffs, and then handed the pipe to Tobéngötiwa, who smoked a while, handing the pipe to Macángöntiwa, he to Cúkaoma, he to Yukíoma, and he to Mōkáhtiwa, who cleaned it and laid it on the floor. While the men smoked, they exchanged, as usual, terms of relationship as follows:

Tobéngötiwa to Mōkáhtiwa: Ítii (my child), Mōkáhtiwa answering: Ínaa (my father); Macángöntiwa to Tobéngötiwa: Itópko (my younger brother), answer by Tobéngötiwa: Iwáwa (my elder brother); Cúkaoma to Macángöntiwa: Ínaa (my father), answer: Ítii (my child); Yukíoma to Cúkaoma: Ítii, answer: Ínaa; Síhongwa to Yukíoma: Itáhaa (my uncle—mother's side), answer: Itíwayaa (my nephew); Kiwánhoya to Síhongwa: Ínaa, answer: Ítii; Mōkáhtiwa to Kiwánhoya: Íkwaa (my grandfather), answer: Ínii (my grandchild).

After the smoking, all put some corn-meal on the tray from all directions, Macángöntiwa also "washing," as it were, his hands in corn-meal. Tobéngötiwa thereupon took some honey into his mouth, whistled, with a whistle made of an eagle wing bone, five times towards the tray, rubbed and "washed" his hands also in corn-meal, and then handed the tray to Macángöntiwa. The latter held the tray with both hands in front of himself, uttered a short prayer, and handed it back to Tobéngötiwa, who uttered a long prayer over it, and again handed it back to Macángöntiwa, who now also uttered, in a low, murmuring tone, a long prayer over it. The tray was then handed to Cúkaoma, who uttered a short prayer over it, and returned it to Macángöntiwa, who placed it on the floor, sprinkling a little sacred meal on it. Each of the others then uttered a short prayer. While one prayed the one who was to follow sprinkled sacred corn-meal on the tray. Mōkáhtiwa then again lit the pipe and all smoked as before, after which all took a little honey into their mouths, spat it into their hands and around themselves, rubbing their bodies with their hands. Macángöntiwa hereupon laid one of his and one of Tobéngötiwa's báhos on the small tray containing the corn-meal, and left the house to take them to the house of his brothers-in-law. The latter is the chaákmongwi (crier chief), whose duty it is to announce religious ceremonies about to be celebrated. Tobéngötiwa handed all the other offerings from the tray to the following men, who were to deposit them at the places mentioned in connection with their names: Those from the north side on the tray, to Cúkaoma, to deposit them at Achámali, a shrine, situated about a quarter of a mile north of the village. Those from the west side on the tray to deposit them at Lánva (Flute





PL. CLIV. ENTRANCE TO THE SPRING LÁNVA.

This is one of the most important springs of the Oráibis, not only because a large proportion of the inhabitants depend on it for their water supply, but also because prayer-offerings are deposited here and water gotten at almost every ceremony, and at the large summer assembly of the Flute Order complicated and important rites take place in and around this spring. It is situated about half a mile west of Oráibi. The rounded objects on the steps are water vessels left to be filled as soon as enough water has run into the spring, the water supply being very scant at certain seasons of the year.

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arrived to the station about 10:30 a.m. and found that he had left his car at the gas pump. He was then informed that his car had been taken from him by a man who had come to the station to buy a car. This man had been seen driving a dark colored sedan with a California license plate number 100-1000. The man was described as being approximately 5' 8" tall and wearing a light blue shirt and light blue trousers. The man was also described as having short hair and wearing a dark blue leather jacket.

He was also described as having a mustache and wearing a dark blue leather jacket.

Spring), about one-half a mile west of the village, at the foot of the mesa. (See Pl. 154.) Those from the south side on the tray, to deposit them at an unidentified place south of the village. Those from the east side of the tray to Yukioma, to be taken to a hill on the east side of the village half-way down the mesa. To each messenger he also gave some of the púhus and nakwákrosis lying on the north-east and south-west sides of the tray. He himself took with him a few yellow púhus which, I think, he took to the shrine of his ancestral deity, Kóhkang Wúhti (Spider Woman). If he also took a báho and some nakwákrosis, as he did in 1896, it escaped my notice. But as I observed the distribution of these prayer offerings closely, I am inclined to believe that we have here another of the many variations that occur in the same ceremony in different years, especially in the manufacturing of báhos, púhus, and nakwákrosis. This part of the Hopi ceremonies is extremely complicated in its details, and much remains to be studied about the origin, meaning, object, and the variations at the different ceremonies, of these prayer offerings.

The móngwlalawaiya that was to take place in the evening, I did not witness. I was assured by different parties that it did not take place. It will be remembered that the one described in connection with the báholawu of 1896 was based not upon personal observations, but upon a description given by one of the liberals who formerly participated in it, and it is possible that this part of the Snake ceremony, like so much of this and other Hopi ceremonials, has been discontinued, or is at least not observed on every occasion.

Next morning at sunrise, the crier ascended the house from which religious ceremonies are publicly announced, deposited the prayer offerings in the shrine already mentioned, and then announced the approaching Snake ceremony in the words given in connection with the báholawu of 1896. This announcement is called "tingapngwu (dance announcement) or cháalawu (crying out).

#### PARTICIPANTS.

It has already been stated that in Oráibi the number of men participating in the Snake ceremony is always small, owing to the fact that those members of the Snake and Antelope Fraternities, who belong to the liberal party under chief Lólolomai, persistently refuse to take part in the ceremony. Following is a list of the participants and their clan relationship as far as recorded:

1896.

## I.—SNAKE PRIESTS.

1. Macángöntiwa (chief priest)	Tcū (Rattlesnake) clan.
2. Nüvákwhahū,	Tcū (Rattlesnake) clan.
3. Cúkaoma,	Tcū (Rattlesnake) clan.
4. Pühúnömtiwa,	Tcū (Rattlesnake) clan.
5. Siékáhongniwa,	Tcū (Rattlesnake) clan.
6. Macátiwa,	Tcū (Rattlesnake) clan.
7. Tútürzba,	Tcū (Rattlesnake) clan.
8. Tawámshaiima,	Pákab (Reed) clan.
9. Síohhya,	Pákab (Reed) clan.
10. Siékáveima,	Pákab (Reed) clan.
11. Hóveima,	Píhkash (Young Corn) clan.
12. Lomámshaiima,	Ísh (Coyote) clan.
13. Talásawahtiwa,	Ísh (Coyote) clan.
14. Qótcvoyaoma,	Honáni (Badger) clan.

## II.—ANTELOPE PRIESTS.

1. Tobéngötiwa (chief priest),	Kóhkang (Spider) and Chorzh (Bluebird) clan.
2. Tobévohyoma,	Kóhkang (Spider) and Chorzh (Bluebird) clan.
3 Lomáyeshtiwa,	Kóhkang (Spider) clan.
4. Kiwánhoya,	Bátki (Water House) <sup>1</sup> clan.
5. Síhongwa,	Ísh (Coyote) clan.
6. Siékáyeshnöma (Antelope maid),	Ísh (Coyote) clan.
7. Mokáhtiwa,	Tab (Rabbit) and Pip (Tobacco) clan.

<sup>1</sup> I have followed other authors in the translation of "Bátki" for want of a better translation, though I have for some time had some misgivings about the correctness of the rendering "water house," for which the Hopi equivalent would be "báhki." When studying the Blue Flute ceremony in Oráíbi in January, 1903, some of the older leaders related the tradition of the meeting of the two Flute Societies at the spring near Oráíbi (where they still have mutual ceremonies), the Kóhkang (Spider) clan and Bátki clan. When I asked for the meaning of bátki they promptly said *cut or divided water or spring*, from báhu (water), and túki (cut, divided, separated), because, they said, they had then and have ever since used that spring in their ceremonies mutually; it had been divided between them and the other Flute Society. Numerous Hopi words could be mentioned showing just such a connection between a noun and the word "túki" (cut, separate). I do not recall a single instance where "water house" has been given me as the meaning of "bátki." I am invariably told that they did not know what it meant, and when I suggested "water house" they said it might mean that, though on account of the "t" sound they thought it must be archaic. On the other hand, when I submitted the newly discovered rendering "divided (or cut) spring" to others they said they had never heard it; but as no one knew what batki meant the derivation from bahu and túki might be correct. So further investigations are necessary before this point can be definitely settled.

8. Tūvávunka (Antelope maid), Tap (Rabbit) and Pip (Tobacco) clan.
9. Síhungniwa, Honán (Badger) clan.
10. Yukíoma, Kókob (Lizard) clan.
11. Lomávitchangwa, Batáng (Squash) clan.
12. Kúwánnömka (Antelope Maid), Pákab (Reed) clan.

1898.

#### I.—SNAKES.

The same as in 1896, except Lomámshaiima and Sikáveima.

#### II.—ANTELOPES.

The same as in 1896, except Síhungniwa, Lomávitchangwa, and Lomáyeshtiwa, but instead of them:

Kárzhongniwa,	Kóhkang (Spider) clan.
Pilángpu (novice),	Ish (Coyote) clan.

1900.

#### I.—SNAKES.

The same as in 1896, except Macángöntiwa<sup>1</sup> and Núvákwhahū.<sup>2</sup>  
Besides those present in 1896:

Múcáhongniwa,	Tcū (Rattlesnake) clan.
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#### II.—ANTELOPES.

The same as in 1896, except Kiwáhoya,<sup>3</sup> Lomávitchangwa, Lomáyeshtiwa, Sikáyeshnöma, and Kúwánnömka.

Besides those present in 1896:

Sikáheptiwa,	Bátki (Water House) clan.
Chórzwaima,	Ish (Coyote) clan.
Hónwahtiwa,	Kwa (Eagle) clan.
Qótcventiwa,	Aoát (Bow) clan.

1902.

#### I.—SNAKES.

The same as in 1896, except Núvákwhahū and Sikáveima.

<sup>1</sup> Who had a quarrel with the Antelope priest, and hence refused or was not allowed to participate.

<sup>2</sup> Deceased.

<sup>3</sup> Deceased.

## II.—ANTELOPES.

The same as in 1896, except Kiwánhoya, Tobévohyoma, Yukíoma, Lomávitchangwa, Sičáyeshnöma, and Kūwánnömka.

Besides those present in 1896:

Kárzhongniwa,	Kóhkang (Spider) clan.
Sičáheptiwa,	Bátki (Water House) clan.
Pilángpu,	Ish (Coyote) clan.
Taláchongniwa,	Tūwá (Sand) clan.
Hónwahtiwa,	Kwa (Eagle) clan.
Chórzwaima,	Ísh (Coyote) clan.



A



B



**PL. CLV. THE SNAKE KÍVA.**

- A. The whip nátsi in position.
- B. The whip and bow nátsis and two water vessels in position.



## FIRST CEREMONIAL DAY.

(SHUSH KA HÍMUU; ONCE NOT ANYTHING.)

In the morning at about five o'clock, the Chief Snake and Antelope priests repair to their respective kivas, bringing with them their nátsis, some pipes and tobacco, and some sacred corn-meal. On one occasion I saw the Snake priest get this meal from the ancestral home of the Snake clan, where his sister had ground it for him. The latter priest goes to the Tcú (Rattlesnake), the Antelope priest to the Náshabe (Central) kiva. The latter will for convenience' sake be called Antelope kiva throughout the paper.

After sprinkling a circle of corn-meal around the kivas,<sup>1</sup> to warn, it is said, nonparticipants that a ceremony is in progress in that kiva, both priests put up their nátsi. This consists in both cases of two round sticks, about fourteen inches long, to which two long black eagle wing feathers are fastened. In fact, it is one of the so-called tcú wūwahpis<sup>2</sup> (rattlesnake whips), used on the snake hunts, and hence might be properly called, whip nátsi. (See A, Pl. 155.) The aoát (bow) nátsi is not put up until the fifth day, and will be described later. The whip nátsi is inserted in the matting at the south side of the hatchway. Before it is inserted, the priest holds a pinch of meal to his lips, utters a silent prayer over it, and then sprinkles a part of it on the place where the nátsi is to stand and throws the rest towards the rising sun. On one occasion I noticed that the Antelope priest spurted a little honey on the nátsi, and that he stopped at the foot of the ladder for a few moments, uttering a brief, silent prayer before he took it from the kiva. It is more than probable that he does that every time when he puts it up, and it is possible that the Snake priest does the same, though I have not noticed it thus far on any other occasion.

Having placed the nátsis in position, both chiefs sweep their kivas, carry out the refuse or sweepings, build a fire, and then squat down near the fireplace, where they smoke for about an hour, during which time, usually one or two others, who are to participate in the ceremony, join them. Near the fireplace may at this time usually be noticed a tray with meal, a pouch with tobacco, some pipes, a can or

<sup>1</sup> In 1898 this meal ring was made by the Snake chief after the nátsi had been erected.

<sup>2</sup> This whip is also called pühúwanpi (soothing implement) from pühúwanta, to soften, make pliable—for instance, a hide: or to soothe, make gentle—for instance, a child, animal, etc.

pot with honey, etc. On one occasion I also noticed in the Snake kíva a small, old skunk'skin with these objects, the presence of which, however, I believe, was accidental, and which, I think, was later fastened to the bow nátsi.<sup>1</sup>

Having finished their smoke, the Snake priests at once begin to repair some snake bags and snake whips, to make some nakwákrosis of eagle feathers, staining them with the red cútá. One of these they tie into their hair, where it is worn throughout the ceremony. It is called ómawnakwa (cloud wish or prayer). Other paraphernalia are brought to the kíva by the chief priest, such as snake bags, sticks, and shipwikas for the snake hunt, etc. The latter is a small triangular, spade-like iron implement, said to have been made by the Spaniards when they were still in the country, but now used by the Snake priests only for digging up snakes on the snake hunts.<sup>2</sup>

At about six o'clock in the morning the Snake priest repairs to the Antélope kíva, taking with him a pouch of tobacco and a pipe. Here he and the Chief Antelope priest indulge in a smoke which lasts about half an hour, and during which, as a rule, nothing is spoken except the customary exchange of relationship. At about breakfast time a few more participants usually put in their appearance. After breakfast an extended smoke is indulged in, and after that, preparations are begun to be made for the snake hunt. Nakwákrosis are made and tied to the snake bags, the hair combed, the bodies painted up, kilts put on, etc. At about half-past ten o'clock in the forenoon, they start on the snake hunt (see Pl. 156), north of the village. Each man takes with him a shipwika, one of the small buckskin snake bags, a small bag containing sacred meal, some nakwákrosis, and a few sticks of hohóyaonga (*Lesquerella cinerea* Watson). The chief priest carries in a bundle, a pouch with tobacco, some pipes, and some food—especially píki. All are attired in a common kilt and moccasins, the body decoration consisting of a pinkish spot on the lower and upper leg, lower and upper arm, forehead, and on each side of the sternum and the spine. The hohóyaonga mentioned is a root and is frequently used during the Snake ceremony. A piece is chewed in the mouth and then spat out on vessels, clothing, and other articles that have been in contact with the participants in the Snake ceremony; or into springs from which they have drunk during snake hunts, etc. This is done in order to discharm these objects and

<sup>1</sup> I am told that if some one has a skin that is suitable for the aoát nátsi, he brings it to the Snake kíva where it is smoked on, and thus consecrated, as it were, to be fastened on the nátsi.

<sup>2</sup> In various ceremonies a wonáwika (board or plank wfka) is used, which, tradition says, was also used as a weeding implement, and which was superseded by the better ship (iron) wfka, made by the Spaniards.

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the other, and in the case of the oil which contained no appreciable amount of pentane, the two analyses were in complete agreement. It is evident from the foregoing that the method of analysis used by the Standard Oil Company of New Jersey is reliable, and it is recommended that the American Society for Testing Materials adopt it as the standard method of analysis for the determination of the percentage of pentane in gasoline.

PL. CLVI. THE SNAKE KÍVA AND SNAKE PLAZA.

The kíva seen in the foreground is the Snake kíva, from which the priests are just issuing to leave the village for a snake hunt. They are headed by the chief priest, who carries in a blanket some food for the noonday meal, tobacco, pipes, etc. All hold in their left hand a small buckskin bag for the snakes and a snake whip. One of the priests is just in the act of picking up a shíp-wíka, which they hold in their right hand. To the left of the plate, in front of the one-story house, is the place where the snake dance takes place. Northwest of the Snake kíva is the Maraú kíva, partly hidden from view; in this the Maraú Society holds its ceremonies, and in the one still farther to the north-west, the Honáni kíva, the Powámu ceremonials are performed, while in the fourth one, on the top of which a man is seen, and which is called the Blue Flute kíva, the fraternity of that name holds its performances.

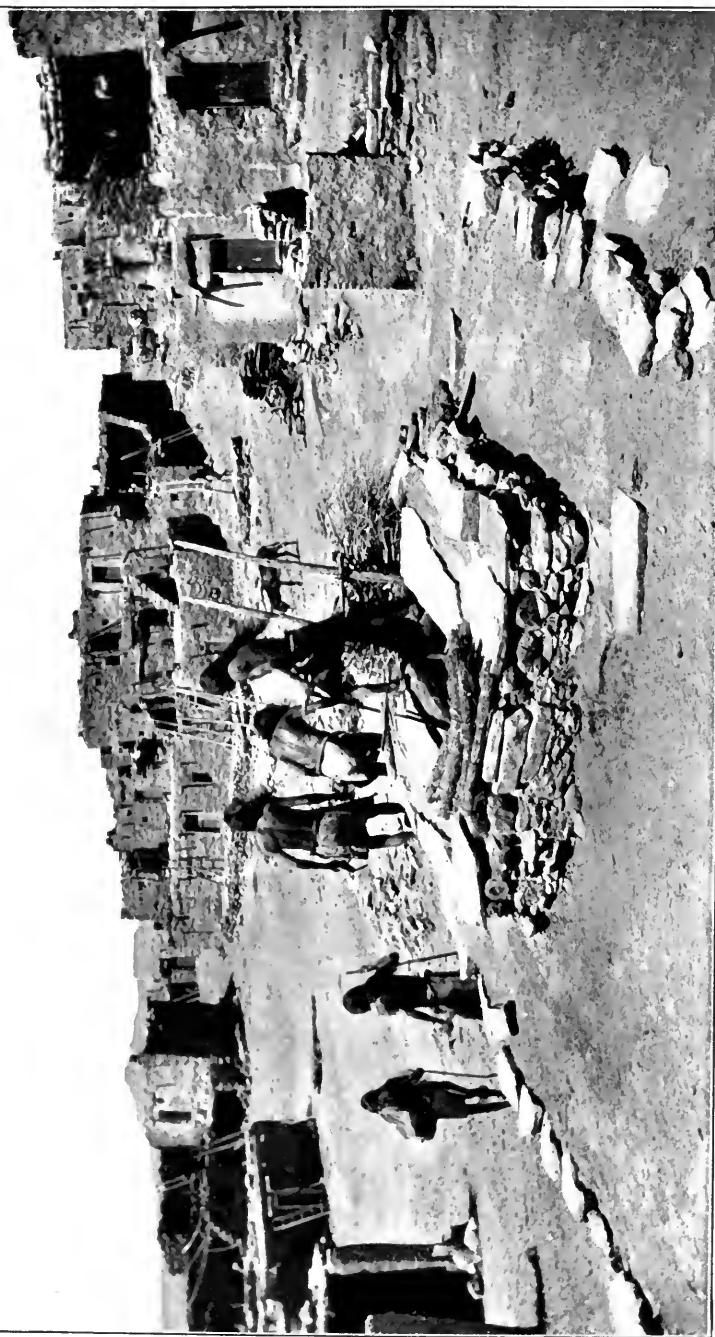


Photo by Sumner W. Matteson.







PL. CLVII. THE SNAKE ALTAR IN THE SNAKE KÍVA.

The larger figurine is that of Póokong, while the smaller one is that of his companion, about the name of which see the notes in the text. To the left of the idols, on the floor, are some lightning frames, bull-roarers, rattles, and a number of snake bags. Other objects seen on the floor are a bowl with cútá, a tray with meal, some blankets, etc.

For CHART 1 see MAKE A MARK ON THE SPOT

the first year of the project, we find a significant increase in the number of students who have completed their first year of college, from 45% to 55%. This indicates that the program is effective in helping students succeed in college.

places from the charm, peculiar to the Snake cult, and make them harmless for the uninitiated. The name hohóyaonga is derived from hohóyaowuu, the Hopi name for a black beetle (*asida rimata*), which is also considered to be a good snake antidote, and ngáya, the Hopi name for root. The snake-hunters do not return until about six o'clock in the evening. At noon they meet at a prearranged place, for a smoke and common lunch, after which they again scatter out until the time mentioned, when they meet in the kiva. Here they lay down the snake bags in the north part of the kiva, assemble around the fireplace, indulge in a smoke, and talk for about half an hour, and then partake of the evening meal. After that another smoke follows. The chief priest brings into the kiva, as soon as darkness has set in, two fetishes, two lightning frames, several tohópkos (stone fetishes representing the puma), and other altar paraphernalia, and places them on the floor in the north end of the kiva. These fetishes are put up late in the evening, which is unusual, as all Hopi altars, as far as I know, are put up during the day. As there is no framework, not even a regular sandridge in this case, this collection of fetishes and other objects could perhaps hardly be called an altar. But as thus far in descriptions of Hopi ceremonies the idols, fetishes, reredos, slabs, and other sacred paraphernalia have been called altars when they are put up or grouped together on stated occasions and according to certain regulation, we shall for convenience' sake, also call these fetishes and what is put up with them—altars.

The principal object in this group (see Pl. 157) is the figure of Póokong, the God of Protection and War. This is one of the best made figures of a Hopi deity the author has ever seen. There is perhaps no idol on any of the Hopi altars whose face resembles so much that of a human being as that of the Oráibi Snake Póokong. This, however, does not pertain to the other parts of the body, which are mostly ill-proportioned. The idol is made of wood, which is undoubtedly báhko (cottonwood root), covered, I think, partly with rawhide. It is black and evidently very old. Around the neck Póokong wears several strands of old beads, and around the body a belt of very old wampum and a string of red horsehair, called táwhona. On his back he carries a netted wheel, which represents a shield, and on his head a cap of some old material, probably buck or elk skin. Around his body is also tied a string of nakwákwosis to which new ones are added at every ceremony. To the top of his cap is fastened an old hurúnkwa, which usually consists of a round hollow stick to which many different kinds of feathers are fastened, and the ends of which are closed up with buckskin, taken from the clothes of

slain enemies.<sup>1</sup> Behind the beads over the breast are many so-called kaléhtak (warrior) báhos which will be described later. The feet of the idol are fastened to a block of wood.

To the left of Póokong stands a smaller idol. There is perhaps no piece of Hopi religious paraphernalia, no matter how sacred, concerning which I have had such great difficulty to find out what it is and what it stands for, than this figurine. From almost every one whom I have asked, even my best friends, who are members of the Snake Fraternity, and—so it would seem—ought to know, I received the stereotyped answer: We do not know. Some say it represents the wife, others the sister, still others the brother of Póokong. Other information from Hopi mythology, which tells us of a younger brother of Póokong, would, of course, lead us to at once conclude that this figure represents none other than that younger brother of Póokong. But why, then, this uncertainty in this case, when almost any Hopi, acquainted with Hopi traditions and mythology, is well aware of and speaks of this personage—Póokong's brother? It is not impossible that further study will or may show that another deity is here represented. Good Hopi authority says it is Nayóngaptúmsi, the sister of Múyingwa, the God of Germination and Growth.

The figurine is also made of báhko (cottonwood root), but much more crudely than Póokong. It has neither arms nor legs, and the body is painted in bands which run obliquely around the body. The colors of the bands, commencing from above, are as nearly as could be made out, as follows: red, green, white, red, green, yellow, green, white, red, green, red, white, yellow, green, red.<sup>2</sup> The bands are separated by narrow black lines. On the head, the idol wears a terraced cloud symbol. Around the body a string, to which many nakwakwosis are tied. Behind this string, or belt, are thrust two old báho sticks. Also a tawahona is tied around the body.

On each side and between the two idols stand four tohópkos (from tóho, puma, or panther, and póhko, animal) of various sizes, and to the right of Póokong lie on the floor the bull-roarers, lightning frames, snake bags, two old áyas (rattles) like those used by the Antelope dancers in the public dance, a number of snake whips, etc. A tray with corn-meal and some hohóyaonga may also usually be seen near the altar.

In the Antelope kiva nothing of any importance takes place all day. Usually only one or two men besides the chief priest make their

<sup>1</sup>Such hurúnkwas are worn by the Snake dancers in the other villages during the snake washing and public Snake dance.

<sup>2</sup>As the colors were darkened with age, and yellow was more of a light brown color, for which the Hopi used a yellow ochre (pawisa), it was difficult to distinguish between the red and yellow.

appearance in the kíva on this day. All either get wood or work in their fields, but eat and sleep in the kíva. The chief priest sometimes cards some cotton and smokes occasionally when being in the kíva.

## SECOND CEREMONIAL DAY.

(SHUSH TÁLA; ONCE LIGHT OR DAY.)

The men arise at an early hour. Some one usually builds a small fire to light the pipes from. One after the other then squats down near the fireplace and smokes a while. Not infrequently the one or the other then runs to his field to look after his crops or melons. On one occasion a snake had gotten out of a snake bag and the crackling of the dry píki on the banquette indicated its whereabouts. Qótcvoyoma, who had brought it in the previous day, called it ivóhkó (my animal) and soon captured it and put it into one of the buckskin snake bags.

Shortly after sunrise the Chief Snake priest again proceeds to the Antelope kíva for the mutual morning smoke with the Chief Antelope priest. The latter fills and lights the pipe, and after both have smoked it empty, cleans it and utters a prayer. The Snake priest then fills and lights his pipe, and both smoke it, always exchanging terms of relationship. When they have done, he cleans the pipe and places it on the floor. Whether he then also utters a prayer, my notes do not state, but from analogies I infer that he does. My notes of 1900 say that he did not, but in that year a new chief priest acted for the first time, and it may have been an omission on his part. After the smoking the two men generally chat a few minutes, whereupon the Snake priest picks up his tobacco bag, the Antelope priest expresses a good wish which the Snake priest returns and the latter then goes back to the Snake kíva. Before he ascends the ladder, however, he stops and says: "Íta cúkaokahkang tákpinawicni" (We happily go forth towards the evening). It may here be remarked that at the conclusion of the evening ceremonies, he says: "Íta cúkaokahkang talðongnawicni" (Happily we go forth towards the morning). In the Snake kíva he usually smokes again, in which others sometimes join him. At breakfast the men return from the fields and all then eat the morning meal together. Every man is supposed to place a small morsel of food before the fetishes. After breakfast smoking is indulged in, moccasins are repaired, nakwákwosis made for the snake hunt, etc. At about half-past ten o'clock, the men paint up again, and put on their kilts, take their snake whips, snake bags, corn-meal, shípwikas or sticks,

hohóyaonga and nakwákwoxis, the chief priest, in addition to all this, taking in a blanket some lunch, tobacco and pipes, and all then start off again for another day's snake hunt, this time to the west of the village. In 1896 I went with the hunters this day, and my notes on that trip read as follows: On the second day I accompanied the party. At the foot of the mesa is situated one of the principal springs, Lánya (Flute Spring). Here the men stopped and all sprinkled a pinch of meal into the spring, two of them also depositing a nakwákwoxi. Here the men separated in twos and twos. I joined the two consisting of the chief priest and old Nüvákwhahū. Unfortunately the first is entirely blind on one eye, the other one being very poor; Nüvákwhahū is also old and feeble, and also nearly blind. So the prospect of seeing snakes captured was not very encouraging from the start. But the other men were strong and vigorous, and it would have been impossible for me to follow them over the many miles they traveled on that hot day. The party that I followed found no snakes, although they searched very diligently. This was undoubtedly partly due to the fact that a late rain had formed a crust on the surface of the ground, which made it exceedingly difficult to find any snake tracks. I heard many complaints about this, not only from my two companions, but also from the others, and not only on this, but also on the other days.

At about four o'clock the hunters met at a place agreed upon in the morning. This was a partly finished house near an old spring at which the two Flute Societies have ceremonies on the last day of their celebration. This is situated about two miles and a half northwest of the village. Having placed the snake bags, only one of which contained one or two snakes, on the ground, the men grouped around them, and then smoked a while, after which they ate their lunch, which was followed by another smoke and a short period of rest, whereupon they returned to the village. Having arrived at the kiva, they placed the bags, the empty ones as well as the one containing the snakes, in front of the fetishes, and then sat down near the fireplace, again smoking. During this smoke, I have repeatedly noticed, all are unusually solemn. After the smoking, each man utters a prayer. As soon as the last prayer is spoken the seriousness seems to be broken and a freer intercourse prevails in the kiva, which is still more enlivened by the supper, now arriving, and which is usually thoroughly enjoyed by the tired men. The chief priest goes over to the Antelope kiva again for the usual smoke with the Antelope priest, as he does every evening and morning. The evening is spent in gossip, smoking, and resting.

In the Antelope kíva the same condition of things exists on this day as on the preceding day. Only two or three men generally put in their appearance and these are in the fields the greater part of the day. They only eat, smoke, and sleep in the kíva. The chief priest sometimes cards and spins cotton for the manufacture of báhos later on, sometimes he also goes to his field, and not infrequently he may be seen, wrapped in a thin blanket, silently sitting, sometimes dozing, in the north-west corner of the kíva.

### THIRD CEREMONIAL DAY.

(LÖSH TÁLA; TWICE LIGHT OR DAY.)

This day is spent in essentially the same manner as the two previous ones. On one occasion I noticed that several men brought some rabbits with them from the snake hunt. Qótcvoyaoma had three. Some of the Antelope men were also hunting rabbits. In 1896 in the morning, the snakes that had thus far been captured were put under an inverted jar, which had been brought in early in the morning (or perhaps late on the previous evening). These jars are kept under a rock south of and only a few hundred yards from the village. The jar was placed to the east side of the altar. It had a small opening in the rim and another half-way up on the side of the jar. Both openings, as well as the small open space between the floor and the rim of the jar, were hermetically sealed with mortar. If it is borne in mind that the snakes are piled up on top of each other in this small inclosure it seems almost incomprehensible that they do not suffocate.

In the ceremony of 1898 Macángöntiwa's sister<sup>1</sup> overhauled the entire kíva, closing up every crack and hole through which a snake might possibly escape. In 1900 this was done by Chief Priest Pühánömtiwa on the second day. The snake jars, of which one was put in on this day in 1896, were put in a day or two later in the other two years, so that it will be seen that the small details of these ceremonies are subject to considerable variation, a fact that I have noticed quite frequently. The vessels, in and under which the snakes are kept also vary very much in size, shape, and kind in the different years and different ceremonies.

In the morning, at the usual time, the Chief Snake priest again proceeded to the Antelope kíva for the mutual smoke with the Antelope priest that has already been described.

The fact of my having accompanied the snake hunters on the

<sup>1</sup> She is also sometimes called Tcū Mana (Rattlesnake Maid).

second day in 1896 led to a serious conference in the Snake kíva on the morning of this day.

Soon after breakfast the Snake men again made the necessary nakwákrosis and other preparations for the snake hunt, and then sat down near the fireplace and smoked. I noticed that they were very solemn and that something unusual occupied their minds. Presently Lomáhungyoma, the chief of this conservative faction, entered the kíva and joined them in smoking. Macángöntiwa now told them with a trembling voice that I had been with them on the previous day and that they thought I intended to go with them again. They were afraid that their fathers, the snakes, might be angry, that my presence might interfere with the efficacy of the ceremony, inasmuch as it might cause the displeasure of the snakes, keep the hunters from finding many, that they were very unhappy about this, etc. They then begged me not to go with them any more. No white man, they said, had ever seen nearly as much of their ceremony as I had; in fact, very few had ever seen anything; I could see and hear everything else, only I should do them the favor and not go with them on the snake hunt. Not wishing to incur the ill will of the people, I promised that I should not go with them any more during that ceremony, on the condition that otherwise, they do not object to my seeing and studying everything else. To this they readily consented, and a big burden seemed to have rolled from their hearts. The solemnity which seemed to pervade the kíva like a spell was broken, the conversation dropped into the usual jovial tone, and all got ready and soon started for the hunt. As ill luck would have it, they did not find a single snake that day, as far as I could find out, which fact I did not fail to mention to them in the evening. Had I gone with them they, of course, would have attributed their failure to my presence. On the other hand, I have reasons to believe that their objections to my accompanying them were partly due to the fact that they were censured by others in the village.<sup>1</sup> The capturing of a snake has been described to me by various persons as follows: When a reptile is found, a nakwákrosi and a small pinch of meal is thrown towards it. The hunter then grabs it, if it is not coiled up, strokes it gently, and then places it into his snake bag. If it be coiled up and show fight, however, the meal and nakwákrosi is also thrown towards it, but in addition to that the snake whip is rapidly shaken or waved over it, until the snake uncoils, whereupon it is taken. If it escape into a hole or be tracked to a hole, it is dug up with the shipwika, already described, or with a stick. If a reptile refuse to uncoil, the party or parties sit down near

<sup>1</sup>No objection was raised by any one, as far as I know, when I accompanied them in 1900.

it and begin to smoke, blowing the smoke towards it.<sup>1</sup> Should a certain party absolutely fail to take such a coiled snake, he infers that his "heart is not good," and that the snake is angry. Another man is then called to try the experiment, and if he fail, another one, etc.

It has already been stated that in 1896 no snakes were found on this day. The hunters came back in the evening, tired and discouraged. They again complained a great deal about the hard crust on the ground. But when they had assembled around the fireplace and were smoking, some one was heard stamping his foot on the roof of the kiva, a sign that he had something to communicate to the inmates of the kiva. Pūhánömtiwa ascended the ladder and was handed a shirt, one sleeve of which contained a snake. This Pūhúnömtiwa took out, placed it into a snake bag, chewed a small piece of hohóyaonga, and spurted it on the shirt, to cleanse it of the snake charm, and handed it back to the owner, who had been waiting outside. Presently another man announced his presence in the same manner, and handed in a pair of pants. One leg of these, which, like the shirt sleeve, had been tied up at one end, also contained a snake. It was also taken out, the pants treated in the same manner as the shirt, and handed back to the owner. Both of these men were members of the Snake Fraternity, but for some reason, did not participate. I was told that if any member of the Snake Fraternity happens to find a snake while the ceremony is in progress, he is at liberty to bring it in. These men had been working in their fields, and not having with them a regular snake bag when they found the snake, had improvised a bag, the one of his shirt sleeve, the other of his pant leg. It has been stated on a previous page that none of the liberal faction now participate in the Oráibi Snake ceremony, but it may be remarked in this connection that not nearly all of the members belonging to the conservative faction participate either. I took occasion to question some of the latter as to the reasons why they stayed away. One said, because his wife, another because his child, had died not long previously, and hence their "heart was not good," i.e., they were not in a proper condition to take part. Others stayed away for other reasons (for instance, on account of having a quarrel with some one, etc.). Not a few frankly admitted that they did not participate because they were "mámkashi" (afraid). On one occasion I noticed that every Snake priest, after he had finished eating supper, chewed a little hohóyaonga and spurted it into his food bowl.

<sup>1</sup> I have never seen the individual hunters take tobacco and pipes with them, but this smoking towards a rebellious reptile has been mentioned to me several times. It is possible that on those occasions where my informants saw it done, either the chief priest was in hailing distance or the hunters happened to have a pipe with them.

In the Antelope kíva practically the same condition of affairs exists as on the preceding day. Only about three or four men are in. These mostly work in their fields. The chief priest stays in the kíva most of the time; he smokes, cards and spins cotton, sometimes gets wood, or goes to his field. In the morning and evening he, of course, is at his post for the mutual smoke with the Snake priest. All again sleep in the kivas as usual.

## FOURTH CEREMONIAL DAY.

(BAYÍSH TALA; THRICE LIGHT OR DAY.)

I was usually in the kíva early on this day—one time as early as a quarter past three in the morning, when all were still sleeping. The number of Snake men present on this day varied in the different years; in 1896 there were seven, in 1898 I failed to state in my notes the exact number, in 1900 there were only six. On this day some of the men again usually run down the mesa before sunrise to look after their crops, but return to their kíva for breakfast and to prepare for the snake hunt. They take with them, however, their snake bags, snake whip, corn-meal, etc., and put on their kilts in order to be prepared to properly capture and handle a snake if one be found. If a new participant comes in, he first of all stands in front of the altar, holds a little sacred meal to his lips, and then sprinkles it towards the altar. He then takes off his moccasins, loosens his hair, and then squats down near the fireplace to smoke. The smaller boys smoke very seldom. The only time that I have seen them take a few puffs is when the snake hunters, upon their return from the hunt, assemble around the fireplace for the evening smoke. On that occasion I have also heard them utter a short prayer when the men pray after the smoking is over.

Through all my notes of this day runs the complaint of the Snake priests that so few snakes have been found. This is one reason why new participants are heartily welcomed, and why the snakes found are not transferred to the jar every morning. In 1898 no jars had been brought in yet up to this day. (For snake hunt see Pl. 158 and 159.)

In the Antelope kíva the situation remains unchanged. The number of men present in this kíva are not known to have exceeded four on this day. These eat, smoke, and sleep in the kíva, but otherwise follow their usual occupations, except Tobéngötiwa, who remains in the kíva most of the time, carding and spinning cotton, sleeping, smoking, etc. The only connection between the occupants of the two



PL. CLVIII. SNAKE HUNTERS LEAVING THE VILLAGE.







**PL. CLIX. SNAKE HUNTERS.**

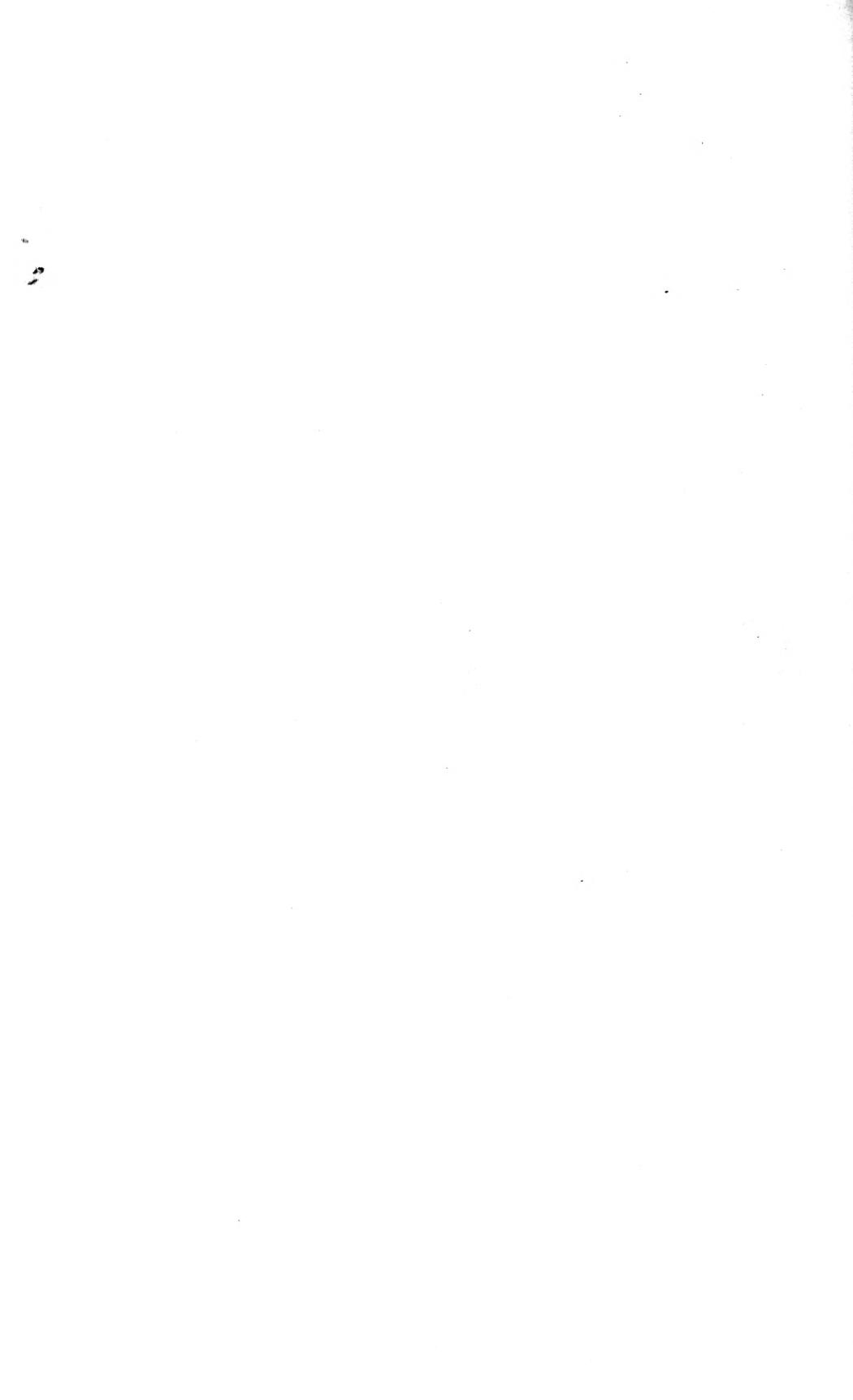
- A. Snake hunters leaving the mesa.
- B. Snake hunters in the field. Several may be seen dimly somewhat above the centre of the picture.

A



B





kivas is again the mutual smoking of the two chief priests in the morning and in the evening. Some notes on facts of perhaps minor interest, specially noticed, are the following:

1. Watching one of the new-comers in the Snake kiva particularly, I noticed that, after having smoked, he made four nakwákwosis, staining them red, and one púhu, fixed up a snake whip, tying two long buzzard feathers to the two sticks and a red nakwákwosi to the tip of each feather, and then laid these objects on the floor and silently smoked over them.

2. The kilt of the smaller boys is usually the so-called "söqómvit kuna" (black kilt), which is the first kilt worn by boys. It is of a dark blue color, with a black circle in the lower corners. (See B, Pl. 177).

3. Some more shípwikas were gotten on one occasion on the morning of this day.

4. The number of red nakwákwosis made for the snake hunt varies with the different priests, some made four, some six, etc. It seems that púhus are made only by some. Not every one makes nakwákwosis every day; if those of the previous day have not all been used up, they are taken again. The púhus, I am told, are not used until the hunters are ready to return to the village in the evening, and so it is probable that only one of a certain party has a púhu, though it may be that each one has one. They are said to be laid on the ground as a prayer for a safe return. This, however, has not been personally observed, and needs further investigation.

5. Special notice was again taken of the body decoration of the Snake men; it is as follows: Spots of about the size of a hand were made with a pale red or pinkish clay on the following parts of the body: both upper and lower legs (on the outside), both upper and lower arms (outside) each side of the sternum and the spine, the forehead, and the hair in front and on both sides of the head.

6. Every new-comer ties a nakwákwosi into his hair before starting on the snake hunt. This nakwákwosi does not differ from those taken on the snake hunts. Such a head feather is worn in nearly all Hopi ceremonies, and is called nákwa (wish, prayer).

## FIFTH CEREMONIAL DAY.

(NALÓSH TALA; FOUR TIMES LIGHT OR DAY.)

### 1.—GENERAL REMARKS.

With this day the ceremonies become more comprehensive and complicated, especially in the Antelope kíva. In fact, while up to this date our attention has been chiefly occupied by the Snake kíva, it will from this day be principally directed to the Antelope kíva, with the exception, perhaps, of the last day, on which the events in both kívas are probably of equal importance.

At about half-past four o'clock in the morning a new nátsi is put up at each kíva, the whip nátsis, however, remaining as before. (See Pl. 160.) A new corn-meal circle is sprinkled around both kívas by the respective chief priests, in order, I was told, to keep out intruders. The new nátsi is called aoát (bow) nátsi and consists of an old bow to the string of which is fastened a so-called "táwahona." A táwahona is a string to which many small bunches of red horsehair are tied. To this string are also tied some weasel and polecat, or skunk, skins and some bald eagle feathers. The two nátsis at the two kivas are essentially alike. After the nátsis have been put up the two chief priests go into their respective kívas and smoke. After the smoke the Antelope chief gets the paraphernalia for the Antelope altar, which are wrapped up in bundles, and places them on the floor at the north end of the kíva, whereupon he begins to make báhos. It is then about five o'clock in the forenoon. More men come in this day, especially in the Antelope kíva. One of the first acts of a new-comer is to sprinkle a pinch of meal on the altar, if it be already put up; if not, this is dispensed with. He then usually loosens his hair, takes off his moccasins—sometimes also his clothes—and then squats down at the fireplace and smokes.

### 2.—PROCEEDINGS IN THE SNAKE KÍVA IN 1896.

At the usual time, about five o'clock in the morning, the Chief Snake priest proceeded to the Antelope kíva for the usual morning smoke with the Antelope chief, whereupon he returned to the Snake kíva, where breakfast soon followed. The other men were engaged in repairing moccasins, snake whips, and snake bags; in making new moccasins and nakwákwois; smoking, carding and spinning of cotton, etc., all of which was continued with more or less regularity throughout the day. Soon after breakfast, the Antelope priest, Lomáyesh-tiwa, who afterwards made the sand mosaic in the Antelope kíva,



PL. CLX. THE BOW NÁTSI IN POSITION.

The bow nátsi consists of an old bow to which a string of red horsehair fringes is attached. To this string are tied several eagle feathers, weasel skins and polecat skins. The nátsis of both kivas are alike.



Photo by G. Wharton James.



came to the Snake kíva, and he, with the Chief Snake priest and a few others of the leading Snake men, indulged in a solemn smoke around the fireplace, which was followed by a fervent prayer by this Antelope priest and by Macángöntiwa, whereupon Lomáyeshtiwa left. At the foot of the ladder, however, he stopped and announced that in the evening the singing would commence in the Antelope kíva. While I have noticed the presence of an Antelope priest for this purpose in the Snake kíva this one time only, it is probable that it occurs at every ceremony.<sup>1</sup>

No regular snake hunt is supposed to take place on this day, and in this year (1896) none did take place, because, the men said, the Antelopes were erecting an altar. In the other two years, however, all but the chief priest and two or three of the older men went out on a hunt again. They gave as a reason, their shortage of snakes. They seemed to be as anxious, however, to find rabbits as snakes. When a rabbit was brought into the kíva it was placed on the floor north of the fireplace and one or several of those present sprinkled a pinch of meal on the head of the rabbit and sometimes they smoked over it.

When the time for the evening ceremony in the Antelope kíva drew nearer the men began to comb their hair, to redaub their bodies, tie hair feathers to their hair, and otherwise get ready for the evening ceremony. Soon a young man named Taláschahtiwa entered the kíva. He sprinkled some sacred meal towards the altar, and one of the other men tied a nákwa into his hair, handed him a white corn-ear, and assigned him a seat on the east side of the altar. He was a novice and was to be initiated as a member of the Snake Fraternity. His costume consisted of a plain white kilt with a pale green border, such as are frequently worn on other ceremonial occasions. While this man was called a keléhoya (novice) and was treated as such, no regular initiation ceremony took place.<sup>2</sup> In fact, none has occurred in the Snake Fraternity in any of the years when the Snake ceremony has been observed. Fortunately, however, most of the Snake priests now living have been present at one time or other, and from one of them the following description of such an initiation ceremony was obtained. While it is, as a matter of course, to be regretted that this important part of the Oráibi Snake presentation cannot be described from personal observations, it has been thought best to record at least the information obtained on this subject from an eye

<sup>1</sup> One of the Snake chiefs claims that Lomáyeshtiwa was there to get some colored sand and other things to be used on the altar and sand mosaic he was about to make in the Antelope kíva.

<sup>2</sup> When I later had occasion to befriend this man, he explained to me among other things that he had been initiated while still a small child, but never participated in the ceremony, and hence this partial initiation. This same custom the author has observed on other occasions.

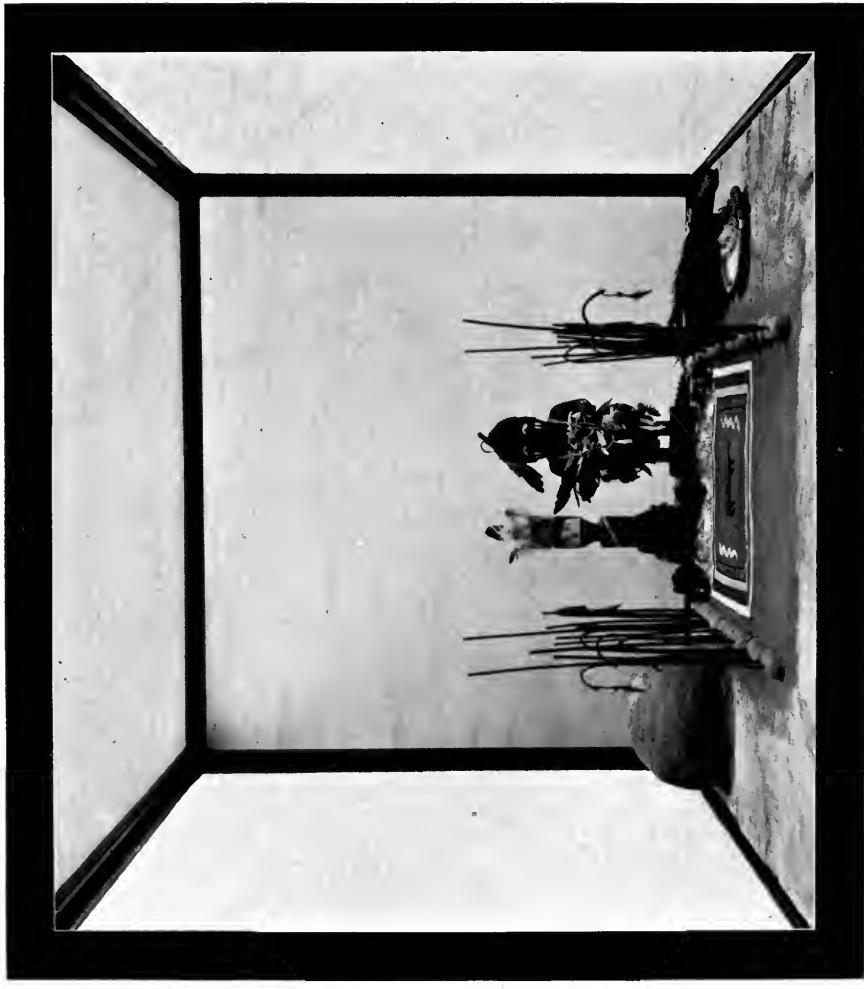
witness, who once played a conspicuous part in the Oráibi Snake ceremony and whose information it is believed is correct. It is in substance as follows:

"When keléhoyas were to be initiated it was done in this way: In the forenoon, a sand picture<sup>1</sup> was made on the floor of the Snake kíva in front of the effigies. The latter were placed close to the north side of the mosaic, which was made by the chief priest or others. When it was finished, some one was sent to the Antelope kíva after the crooks, which were then placed around the sand mosaic in the same manner as they are arranged in the Antelope kíva. As soon as the altar was completed (see Pl. 161), the novices were brought into the kíva by their "fathers" (sponsors or godfathers), who gave to each a corn-ear and tied a small white eagle feather (*nákwa*) into their hair and assigned seats to them on the floor east of the altar. Hereupon, the Antelope priests were called. When they entered, each one sprinkled meal to the altar and then all squatted down on the elevated or spectators' part of the kíva, i.e., the part south of the ladder. All now smoked cigarettes, previously prepared of corn-husk, leaves, and native tobacco, by the pípmongwi, or tobacco chief. In the mean while, two members of the Snake Fraternity had dressed up in a small inclosure that had been prepared with blankets in the south-east part of the kíva. One was dressed up in exactly the same manner as the Antelope priest who dances with the vines in his mouth on the plaza in the afternoon of the ninth day,<sup>2</sup> only his body is not painted up, and the wreath he wears on his head consists of yucca leaves instead of cottonwood twigs. The other man is painted up and costumed in exactly the same manner as the Snake dancers are in the public dance on the ninth day. After all had smoked, they commenced singing. Soon the man dressed up in Snake costume, whom we shall call, for brevity's sake, 'Snake,' emerged from the before-mentioned inclosure, but backward, and dancing in a squatting position. With his hands he made the same motion from one side to the other that the Snake dancers make in the public dance on the last day, when they move the snakes which they are holding between their lips to the time of the singing. As soon as he had emerged from the curtain, he threw with each hand some corn-meal into the kíva, backward of course. He then danced in a squatting position backwards toward the sand mosaic, described a circuit behind it, danced over it from the rear side,

<sup>1</sup> From the description he gave it was very nearly the same as the one figured in the monograph of the Wáipi Snake ceremonials by Dr. J. W. Fewkes. In fact, other members of the Snake Fraternity to whom I have shown that plate aver that the Oráibi mosaic is the same, which does not exclude the possibility, however, of small variations.

<sup>2</sup> See description of the ninth day.





PL. CLXI. THE SNAKE ALTAR.

This Plate shows the Snake altar as it is constructed when initiations take place. The figurines have been described in the text and in connection with Plate 157. The picture in front of the figurines is a sand mosaic, the inner border being yellow, the color of the north; the next one green, the color of the west; the next red, the color of the south; the next white, the color of the east. The borders are separated by black bands, black being the color of above, which is represented by the north-east. In the centre of the mosaic is a figure of a puma and around it drawings of four snakes. The crooks and sticks belong to the Antelope Fraternity.

On one side of the altar is seen the jar under which the snakes are kept, on the other some snake bags and whips and a tray of meal. Unfortunately, the negative seems to have been reversed in making the print for the half-tone, so that what is now the right side of the altar should be the left.

This Plate shows the Snake altar as reproduced by the author in the Field Columbian Museum.

19. *Leucosia* *leucostoma* *leucostoma* *leucostoma* *leucostoma*

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and finally stopped between the puma figure and south border of the mosaic, where he turned around facing the south end of the kiva. The pípmongwi then handed him a cigarette consisting of a piece of corn-husk filled with native tobacco. He smoked a few puffs and then twirled his right hand over his left hand forward, or from himself. He then smoked again a few puffs and followed it by the same motion with his hands, but this time rotating his hands backwards or towards himself. This he did in all four times, rotating the hands two times forward, two times backward, but alternately and always preceding this motion by a few puffs from his cigarette. After the fourth time he hobbled back to and behind the curtain, this time, however, not backward, but face forward. As soon as he had entered the inclosure, the man dressed as an Antelope priest, whom I shall call 'Antelope,' emerged from behind the curtains and went through exactly the same performance and in the same manner as his companion. A second time the Snake went through the same performance after the Antelope had returned to the inclosure, but on leaving the altar, he, this time, instead of returning to the inclosure, hobbled to the Snake priest, who was still sitting somewhat south-east from the altar and who handed him a live rattlesnake. This he took a hold of by the neck with his teeth and grasping the body of the snake with both hands and waving it from one side to the other to the time of the singing, he moved towards the novices again in that squatting position, but facing them. Here he danced several times up and down the line of the novices, but so close to them that the tail end of the snake was dragged over their exposed knees. He then returned in the same manner to the Snake chief, handed him the snake, and returned in the same manner to the inclosure. Immediately the Antelope came out and went through the same performance, only instead of a snake, he used a bunch consisting of a young corn stalk, watermelon, squash, bean, and other vines.<sup>1</sup> As soon as he had returned to the inclosure, both men came out, side by side, again dancing backward in a squatting position to the altar. When they had arrived on the sand mosaic, they turned around as they had done singly, the first time, whereupon they each received a cigarette from the tobacco chief, which they smoked. When through smoking, they danced, still in the same fashion, but now forward, over the sand mosaic, making a circuit in a sinistral direction, not only destroying the mosaic, but also upsetting the crooks. They then returned to the inclosure, whereupon the singing, which had been kept up during all

<sup>1</sup> Another informant says that this man's performance precedes that of the Snake priest's with the snake, just as the dance with the bunch of vines on the eighth day precedes the dance where snakes are used. It is more than probable that this informant is right.

this time, ceased. The Antelope chief then gathered up the crooks, he and his men repaired to the Antelope kíva where the chief priest replaced them at his altar. The ‘fathers’ (sponsors) of the novices, i.e., the men who had brought them into the kíva for initiation, then painted the bodies of the novices the same as the bodies of the Snake priests were painted, and after some one had swept up the remains of the sand mosaic, the Snakes went over to the Antelope kíva for the mutual evening ceremony.”

Thus far, my informant. That this ceremony takes place when new members are initiated, and that only then the full altar is built, I had been told by others before. This same custom also of erecting the full altar at initiations only prevails in other villages.

After this digression, we now recall the fact that we left the Snake priests in the act of getting ready for the evening ceremony, which will be described under a special paragraph. We now wish to state briefly also

### 3.—PROCEEDINGS IN THE SNAKE KÍVA IN 1898.

The proceedings in the morning, which vary very little if any in the different years, have already been noted under “General Remarks” of this day’s notes. I found twelve men in the kíva when I came in, after breakfast, engaged in talking and smoking. This day, as has already been stated, is not a regular hunting day; but very few reptiles having thus far been found, the men soon got ready for the hunt. Nakwákwosis were made, bodies were daubed, and at a quarter of eleven o’clock they left, leaving old Núvákwhū and Macátiwa in charge of the kíva. The statement that up to this time very few snakes had been found was borne out by the fact that as yet no snake jars had been brought into the kíva, the snakes thus far obtained having been kept in the small buckskin snake bags and in a larger (American) bag.

Everything remained unchanged in the kíva and nothing of importance transpired while the men were away. They returned at about five o’clock in the afternoon, some having snakes in their bags, others bringing rabbits. They were greeted with “kwákhwái!” (thanks!) by Macátiwa and Núvákwhū. One of the men handed a rabbit to the latter, who then became very profuse in his expressions of joy and gratitude. When the hunters had laid down their bags, whips, etc., they arranged themselves around the fireplace and engaged in a solemn smoke, which was followed by a prayer from each smoker. Hereupon they engaged in a free conversation relating especially to the day’s

hunt. But the time for the evening ceremony in the Antelope kíva approaching, all washed their hands, combed their hair, renewed their body decorations, and got their snake whips ready. Pühúnömtiwa took from the large snake bag a small snake (a racer) and placed it in one of the small bags for use in the ceremony. At a quarter of six o'clock, Macángöntiwa picked up this bag and a snake whip for each participant in the ceremony, all took some sacred meal in the right hand, and then they proceeded to the Antelope kíva. Having entered this kíva they stopped at the foot of the ladder, Macángöntiwa expressed a good wish, all sprinkled their meal on the altar, and then squatted down on the floor along the banquette on the west side of the kíva. The Antelope men were all in their places, Tobéngötiwa standing at the north-west corner of the altar, the Antelope youth and maid north of the altar, the sprinkler and tobacco chief on the south side, and the rest sitting along the east banquette of the kíva.

After having thus briefly recorded the proceedings during this day in the Snake kíva we are ready to take a seat on the banquette of the Antelope kíva and watch and record what transpires in that chamber during this day, and as this is probably one of the most important days in the Antelope kíva, the notes of 1896 and 1898 will be given separately, the same as those pertaining to the events in the Snake kíva.

#### 4.—PROCEEDINGS IN THE ANTELOPE KÍVA IN 1896.

The happenings in this kíva before breakfast, including the mutual smoke with the Snake priest, have already been mentioned under "General Remarks."

It has already been stated that Tobéngötiwa commenced to cut sticks for báhos at an early hour. In this he was soon joined by an old man called Sihongniwa. They made the following báhos: Tobéngötiwa made six double green báhos, one stick being male, one female, all having black tips and being about four and one-half inches long; one báho of the same kind, but about two inches longer. He also made twelve nakwákrosis of large turkey feathers, four of small turkey feathers, and four of small eagle feathers, all of which he stained red. He also made a púhu, consisting of a cotton string to one end of which is fastened a large eagle breath feather and one of each of the six world quarter feathers, oriole, bluebird, parrot, magpie, topóckwa (unidentified), and ásyá (unidentified), or at least as many of these as the priest has or can procure. The string is then moistened with honey and rolled in corn-pollen and later tied to the long double green báho. Sihongniwa made two chochókpis about fourteen inches

long and two about four and a half inches long, all female. A chochókpi is a single black stick pointed at one end and having a facet at the other end. To the latter end are usually tied a sprig of kúña (*artemisia tridentata angustifolia*), a sprig of máövi (*Guetieriza Euthamia*), a turkey feather, and a corn-husk packet containing corn-meal, into which a little honey is mixed. All this is tied to the stick with twine, which is wrapped around the stick to the width of about an inch and a half and then usually black bands are painted on this white twine, but sometimes as in this case, the white bands are painted red.

While these prayer offerings were made, Kiwánhoya, who was to act as sprinkler during the ceremony, brought into the kíva four móngwikurus (small gourd vessels, covered with a network of twine) (see Pl. 184) and a ngáhkuychakapta (medicine bowl), six corn-ears of as many different colors, and a few other paraphernalia to be used in connection with the medicine bowl. (See Pl. 198.)

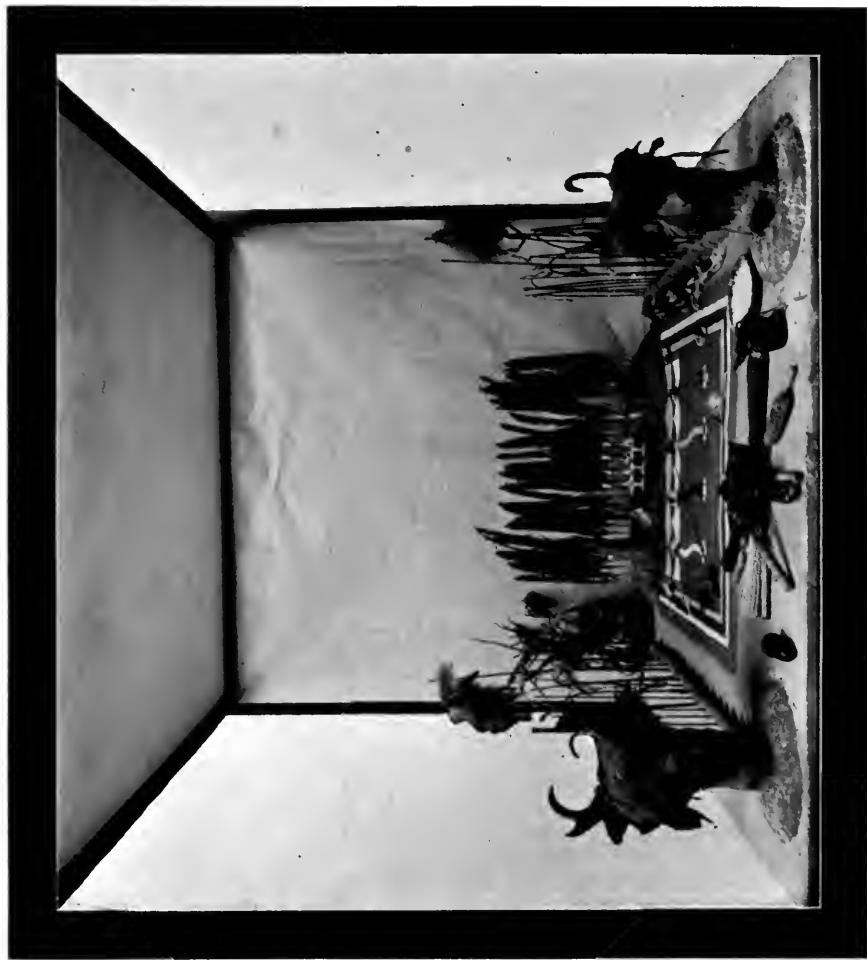
Another man, Lomáyeshtiwa, who was to take an important part in the proceedings of this day, came in at about this time, smoked first, and then commenced tying nakwákwoisis to the bent end of a number of crooks to be used on the altar about to be erected. Tobéngötiwa had in the mean while made a few nakwákwoisis which he handed to Lomáyeshtiwa with the instruction to give them to a man that was to go after sand for the altar. This sand is supposed to be gotten for any Hopi altar by a man who belongs to the sand clan, or at least to some clan related to the sand clan. As in this case no such man happened to be among the participants of the ceremony, they agreed upon a man who otherwise had nothing to do with the ceremony. This sand is generally gotten from a sand hill south-east of the village and half-way down the mesa. The party who gets the sand holds the meal and nakwákwoisis to his lips, utters a silent prayer, lays both objects on the ground, and then takes the sand into his blanket and returns to the kíva.

After having dispatched this messenger, Lomáyeshtiwa washed his head, dried his hair at the fireplace, and then proceeded to the Snake kíva, where he smoked and announced the singing ceremony that was to take place in the Antelope kíva, as has already been mentioned. Upon his return from the Snake kíva he at once commenced to build the altar. (See Pl. 162.) First he made a sand ridge on the floor in the north end of the kíva of the moist sand that Nakwáveima had in the mean while brought in. This sand ridge is about three feet long, eight or nine inches wide, and about five inches high. In the center, but on the north side of this ridge, he made a depression, into which he placed a rectangular medicine bowl (see Pl. 163), filling up the space around it

РАДА ЗГОДА ВІД АНДРЕЯ ВІКТОРОВИЧА

**PL. CLXII. THE ANTELOPE ALTAR.**

The altar shown on this Plate is one that was reproduced by the author for the Field Columbian Museum. In the rear is a sand-ridge, into the centre of which is placed a rectangular medicine bowl. Behind this stand four single black báhos. At each end of the ridge is inserted a típoni, and behind it a row of buzzard feathers. On each side of the sand mosaic stands a row of crooks and straight sticks, the first probably representing life in its various stages, the latter departed ancestors of the Antelope Fraternity. At the head of each row stands an antelope head, the symbol of the Fraternity. The colors of the border of the mosaic are arranged in the same manner as those on the previous Plate. The semicircles at the base of the picture represent cloud symbols, the lines emanating from the clouds, rays of lightning. In front of the altar stands a medicine bowl surrounded by the six ceremonial corn-ears, yellow, blue, red, white, black, and sweet corn. By the side of each ear lies its husband, a hollow stick wound with cotton twine and feathers. On one side of the bowl may be seen a cloud blower, a cone-shaped pipe, on the other side a honey pot, tray with meal, and the long feather used for discharming purposes. Unfortunately, this illustration, in preparing it, has also become reversed so that what is the right side of the altar is here shown as the left side. The feathers on the Antelope heads and on some of the sticks are the nákwas, worn on the head by the dancers.







PL. CLXIII. THE ANTELOPE ALTAR.

While the previous Plate shows the altar as it appears when just completed, this Plate shows its appearance in the evening of the eighth day after corn-meal has been sprinkled on it during all the ceremonies. The picture was taken when the priests were performing the vine dance on the plaza, which accounts for the fact that the medicine bowl, one of the tiponies, nákwás, etc., are missing.



Photo by Sumner W. Matteson.



(except in front) with moist sand. He then placed at each end of the sand ridge a *típoni*. (See Pl. 162.) Before putting down an object, however, he sprinkled a meal line towards a common center at the place where he intended to put the object. It should be remarked here, by way of parenthesis, that he was occasionally assisted by *Tobéngötiwa*, who still worked at his prayer offerings as has already been stated. Next, *Lomáyeshtiwa* made the sand mosaic shown in Pl. 162. He first sifted some fine, dry sand on the floor, to the thickness of about half an inch,<sup>1</sup> for the "field." On this he then produced the picture seen on Pl. 162, with pulverized sand, or rather stone of five different colors: yellow, representing north; green, representing west; red, south; white, east; and black, above. This sand or powder is taken between the thumb and forefinger and dropped in a small stream at the places desired. Everything is done from imagination. Lines or outlines are never made.<sup>2</sup>

As soon as the sand mosaic was completed *Lomáyeshtiwa* thrust a row of black eagle feathers into the sand ridge on the rear side and then put up the crooks on both sides of the mosaic. He then sprinkled six short corn-meal lines, in the manner already described, south and midway of the sand mosaic, and placed upon it the medicine bowl which *Kiwánhoya* had brought into the *kíva* with the netted gourd vessels some time previously. While *Lomáyeshtiwa* had been working at the altar, *Kiwánhoya* had made eight *nakwákwoxis*. Three of these he stained red and took them with him when, immediately after, he went to *Lánva* in order to get some water in one of the netted vessels. Of this water *Lomáyeshtiwa* poured the greater part into the medicine bowl, and then he dropped into it from the north side an old *nakwákwoxi* made of an oriole feather, from the west side one made of a bluebird feather, from the south side one made of a parrot feather, from the east side one of a magpie feather, from the north-east side, representing above, one of a *topóckwa* feather, from the south-west corner, representing below, one made of an *ásya* feather. Next he placed the six corn-ears around the medicine bowl, the yellow one on the north side, the dark blue one on the west, etc. By the side of each corn-ear he placed an object, consisting of a hollow stick, to one end of which some old feathers are tied, and which are wound entirely with twine. These objects, I have been told, are called the "husbands" of the corn ears.<sup>3</sup> I have also heard them called "*nákwa mókiata*" (wish or

<sup>1</sup> The length and width of the mosaic differed very materially in the three ceremonies.

<sup>2</sup> The only exception to this rule came to the notice of the author when the Antelope priests in *Mishóngnovi* made their mosaic in 1901, and that was an innovation.

<sup>3</sup> It is well known that in many songs the corn-ears are represented by various names as being female.

prayer receptacles). Either of these designations would, of course, not necessarily exclude the other. I have heard it stated on various occasions that one of the usual feathers for the six world quarters is also tied to the respective object; i.e., an oriole feather to the one on the north side, a bluebird feather to the one on the west side, etc. These objects may be seen by the sides of the corn-ears around the medicine bowl in almost every Hopi ceremony. In addition to the small nakwákrosis already mentioned a small quantity of corn-pollen and the blossom of *točámsi*<sup>1</sup> (*Delphinium scaposum*) was thrown into the medicine bowl. The following báhos were then placed on the altar: Of the six short, double green báhos, made by the chief priest in the morning, one was thrust into the sand ridge near the típoni at the east end of the ridge, one was said to have been deposited at the shrine of Spider Woman, but just when, and by whom, I failed to record, I presume, however, by Tobéngötiwa, who belongs to the Spider clan. The remaining four were placed on the west side of the sand mosaic to be consecrated there, as it were, and then to be deposited at four different places the next morning. The long double green báho with the long púhu was thrust into the sand ridge near the other típoni and the púhu laid diagonally from north-west to south-east on the sand mosaic. Four black chochókpis with white facets, which Tobéngötiwa had also in the mean while made, were placed in an upright position behind the rectangular medicine bowl, in such a manner that the nakwákrosis of the chochókpis were hanging into the medicine bowl. The preparing of the liquid in this medicine bowl escaped my notice. A number of nakwákrosis were scattered over the sand mosaic. At the south end of each row of crooks was placed an old Antelope skull with the horns and hide on. On these were hung the bunches of head feathers, or nakwákrosis, worn on the heads by the Snake priests, as well as the Antelope priests in the public performance. These consist of a bunch of eagle breath feathers, to the tips of which are tied small bluebird feathers, of which again two and two are tied together. The two típonies are made, as far as I could ascertain, of a round piece of báhko (lit., "water wood," meaning cottonwood root), into the upper end of which is inserted an old celt measuring about three and a half to four inches in width and probably about eight inches in length. Around this are placed some old eagle wing feathers that are tied to the piece of báhko, the latter being closely wound with buckskin thong. Information thus far obtained says that none of the típonies belong to the

<sup>1</sup> Also called tcoróci (bluebird blossom or flower).

Snake priest, and at no time have I seen a típoni in the Snake kíva.<sup>1</sup> When the altar was completed, some of the men sat down to eat and then smoked. It should be remarked that from this day to the evening meal of the eighth day the Antelope priests eat no food that contains any fat or salt.

A few incidents should be mentioned at this juncture that happened while the altar was being constructed and the sand mosaic made: At about noon, Sihongwa took some sacred meal and some nákwákrosis to a spring about two miles east of the village. He also took with him a bowl, but it is supposed that he took that to his house. Sihongwa's father, who did not participate in the ceremony this time, brought to the Antelope kíva a bunch of green corn-stalks, squash, muskmelon and watermelon vines, beans, etc., all with the leaves and roots on them. All these, with the four chochókpis made by Sihongwa in the morning, were put into an ancient pot (see Pl. 162), which was then placed on the north-east corner of the altar. This pot is called bátni, a name which is also used for well, cistern, etc.

At about the time when the altar was completed, old Moákátiwa, who was to act as the companion of the Antelope maid in the approaching ceremonies, made his appearance in the Antelope kíva. After he had partaken of some food and smoked with the others he sat down near the fireplace and made nine cigarettes of corn-husk leaves and native tobacco. These he placed on the floor north of the fireplace for use later on. Tobéngötiwa made some nákwas for use by new-comers. Sihongwa, who in the mean while had returned from his errand to the spring, mentioned before, was sent with a message to the Snake kíva and also to fetch a young maiden who was to act as Antelope maid in the coming ceremonies. He was followed by an elderly man, Yukioma, and one of the leaders of this faction, who was to be initiated into the Antelope order. As soon as he had entered the kíva, Moákátiwa tied one of the nákwas that Tobéngötiwa had made into his hair, handed him a white corn-ear, and assigned him a seat on a blanket which had been placed on the floor east of the altar. Lomáyeshtiwa went and got a small girl, tied a white nákwa into her hair, gave her a white corn-ear, and assigned her a seat by the side of Yukioma. Both were candidates for initiation. Upon entering the kíva, both had first of all stepped to the altar, held their right hand, which contained a little sacred corn-meal, to their lips, uttered a silent prayer, and then sprinkled the meal to the altar.

<sup>1</sup> All informants from all mesas agree in the statement that the Snake chief in Wálpi is the only one who has a típoni.

Preparations were in the mean while also made to decorate the Antelope youth and Antelope maid. The latter seated herself on the banquette in the extreme south-east corner of the deeper portion of the kíva. Síhongwa painted her up. He daubed her hands and feet with dákma (white kaolin), her chin grayish black,<sup>1</sup> and then drew a jet-black line over her upper lip, from ear to ear.

After Síhongwa was through, Lomáyeshtiwa dressed up the mana as follows: First he placed around her, in the form of a dress, the large ceremonial blanket, túihi. Around this, on the upper part of her body, he fastened a pítkuna, the kilt commonly used by the men in ceremonies and Katcina dances. Around her waist he tied a wokókwāwa ("big belt") with knotted fringes. This belt is one of the objects in a bridal costume. To the belt he fastened a bell (on the right side of her body). In her ears she wore the so-called tóoynahkas (small, square, thin blocks of wood inlaid with turquoise) and around her neck many strands of white and red beads to which an abalone shell was attached. Her hair was then combed by Síhongwa and it hung down loosely behind. A small white eagle feather was tied to her scallock on the apex of her head. Finally, Síhongwa placed a drop of honey into the mouth of the mána.

Old Moékátiwa, who was to act as Antelope youth, was decorated by Síhongwa as follows: The hands and feet were painted white, a black line ran from ear to ear over the upper lip. The chin, a spot in each hand and on the sole of each foot, two short lines on each side of the sternum, on each side of the spine, on each lower leg, and each lower arm, all were painted grayish black. White dotted lines were running from the thumbs upward along the inside of the arms to the shoulders, and then down on each side over the chest along the front of each leg to the tip of the big toes. Similar dotted lines commenced on the back of the hands and ran along the outside of the arms, up to the shoulders, down on each side of the back, along the back side of the legs to the heels. Moékátiwa then dressed himself up as follows: Around the waist he tied the usual ceremonial kilt (pítkuna) and sash (mochápmönkwāwa) with a foxskin (sikáhtaypūka), suspended from the sash behind. Over the right shoulder he hung a bandoleer of blue yarn and a strand of the same material he tied around his left leg<sup>2</sup> below the knee. Around the ankles he wore figured ankle bands and in the ears, red and green turquoise beads. To the back of the head he fastened a bunch of white eagle feathers, to the front of the head a

<sup>1</sup> This black stuff is called "Báheckwa," "water-blue," and is the bluish black, slimy, rotten dirt found in springs that have not been cleaned out for some time.

<sup>2</sup> In 1900, around both legs.

bunch of colored pigeon or chicken feathers,<sup>1</sup> while to the scalplock was tied the usual nákwa. Around the neck he wore many strands of beads and around each leg a string of small bells. When he was done, he also took a drop of honey into his mouth.

While these two persons had been arrayed for the ceremony two new men had come in, Kiwáhnoya had filled the big cloud blower (ómawtapi) with the peculiar native tobacco used for this purpose, and the tobacco chief, who usually wears a plain, blue kilt, had made nine corn-husk cigarettes and placed them on the floor north of the fireplace. The Snakes were now notified that all was ready. Until they arrived in the Antelope kiva, the Antelopes waited in silence. In the corner, north-west of the altar, sat Tobéngötiwa; north of the altar stood Mokáhtiwa, the Antelope youth, holding in his left hand a little corn-meal and the típoni from the west end of the sand ridge, and Sikeyeshnöma, the Antelope maid, who holds in her left hand some corn-meal and the pot containing four long, black báhos and, green corn, melon, squash, bean, and other vines. This pot had been handed to her by Sihongwa, while the típoni had been given to Mokáhtiwa by Tobéngötiwa. As the pot with its contents is rather heavy, the mána supports it with her right hand. At the north-east corner of the altar sat Sihongwa, to the left of him first a few Antelopes, then the two Antelope novices, and to the left of them Taláschahtiwa, the Snake novice. South of the altar sat Kiwáhnoya and the tobacco chief. The Snakes, upon entering the kiva, stopped at the foot of the ladder, Macángöntiwa expressed a good wish, all sprinkled meal to the altar, and then seated themselves along the east banquette on the floor. All had on their snake kilts, but were barefooted. For a description of the mutual ceremony now about to begin see "6.—Mutual Ceremony of Snakes and Antelopes," under this day's proceedings.

##### 5.—PROCEEDINGS IN THE ANTELOPE KÍVA IN 1898.

For the proceedings in the morning, the reader is referred to the "General Remarks" at the beginning of the notes on the fifth day. When I arrived in the kiva after breakfast at about ten o'clock, I found several of the men engaged in making the following báhos and nakwákwoxis as far as observed:

Tobéngötiwa made six double green báhos, about five and one-half inches long, with black tips having chat feather nakwákwoxis tied to them, the strings of the latter being red. He also made a double green báho about seven inches long with black tips to which he

<sup>1</sup> Parrot feathers are supposed to be used if obtainable.

attached a cotton string, to the end of which were tied the usual six ceremonial feathers and an eagle breath feather. This string is called a púhu (road). This larger báho was to be used later on the altar. Tobéngötiwa furthermore made four nakwákrosis of small hawk feathers, twelve of small turkey feathers, and four short púhus of small eagle feathers. The strings of all of these were rolled in red cútá (iron oxide) except the long púhu, which was first moistened with honey and then rolled in corn-pollen.

Sihongwa made four chochókpis about four inches long and four about twelve inches long. To the first he attached turkey to the latter eagle feather nakwákrosis. To all he tied a sprig of kúña, a small turkey feather, a sprig of máövi, and a corn-husk packet containing corn-meal and honey. He also made four nakwákrosis, but my notes fail to state what kind of feathers he used.

At about twelve o'clock Tobéngötiwa deposited a báho, some corn-meal, and I believe some nakwákrosis, at the shrine of Kóhkang Wuhti (Spider Woman), which is located under a large rock on the west side and half-way down the mesa. (See Pl. 153.)

I was told that from this day all Antelope priests eat no meats nor salted food, Tobéngötiwa eating only once—late in the evening.

Towards noon, Kárzhongniwa commenced constructing the altar, but I was absent until about half-past three o'clock in the afternoon. When I then returned, I found the altar completed and the men engaged in eating, sleeping, smoking, etc. Mokáhtiwa made a number of cigarettes. These cigarettes were about two and one-half inches long, and consisted of pieces of corn-husk filled with native tobacco. These he placed on the floor north of the fireplace for use in the approaching ceremony. Each of the men made an eagle nakwákosi, coloring the string red. This he tied to the scalpelock. This feather is called, as is usually the case, nákwa, and is used in many Hopi ceremonies.

Yukíoma, who was to act as Antelope youth, and the girl who was to act as Antelope maid, were then dressed up and decorated, for a description of which, see "4.—Proceedings in the Antelope Kíva in 1896."

When all was ready the Snakes were notified to that effect, and their arrival in the Antelope kíva, etc., has already been noted in "3.—Proceedings in the Snake Kíva in 1898" (q. v.). Having thus recorded the proceedings in both kivas for the two years, 1896 and 1898, separately, up to the mutual evening ceremony, we are now ready to describe that interesting event, and as in that very small variations have thus far been noted, it does not seem necessary to describe it specially for each year.





**PL. CLXIV. SINGING CEREMONY IN THE ANTELOPE KÍVA.**

The row of singers to the left are the Snake priests; of the two men in front of the altar the one to the right is the pipelighter, the other one the asperger. The lower illustration also shows the Antelope youth and the Antelope maid. The Antelope singers and novices, not shown in the Plate, sit on the east side of the kíva, opposite the Snake singers.

8000 feet above sea level. The highest point in the state is Mount Shasta, which rises to a height of 14,179 feet above sea level. The state has a total area of approximately 163,696 square miles, making it the fifth largest state in the United States.

The state is divided into nine major regions: the Pacific Northwest, the Central Valley, the Sierra Nevada, the High Sierras, the Great Basin, the Colorado Plateau, the Mojave Desert, the Sonoran Desert, and the Gulf Coast. The state's economy is based primarily on agriculture, mining, and tourism.

The state's population is approximately 39 million people, with the majority living in the San Joaquin Valley and the Los Angeles metropolitan area. The state's capital is Sacramento, and its largest city is Los Angeles. The state's official language is English, although Spanish is also widely spoken.

The state's natural resources include timber, water, minerals, and energy. The state's timber industry is one of the largest in the country, with many large forests located throughout the state. The state's water resources are also significant, with the Colorado River being a major source of water for the state. The state's mineral resources include gold, silver, copper, and lead. The state's energy resources include oil, gas, and hydroelectric power.

## 6.—MUTUAL EVENING CEREMONY IN THE ANTELOPE KÍVA.

It has already been noted that the Snakes, upon their arrival in the Antelope kíva, first halt at the foot of the ladder and then, after their leader has expressed a good wish and all have sprinkled meal towards the altar, seat themselves east of the altar. Furthermore, that the Antelopes are ready for the ceremony, the youth and maid, tiponi and bátni in hand, standing at the north side, the asperger and pipelighter sitting on the south side, and the novices and other participants squatting on the east side of the altar. As soon as the Snakes have seated themselves the pipelighter lights a cigarette at the fireplace, hands it to Tobéngötiwa, exchanging with him terms of relationship. The latter smokes a little while and then hands the cigarette to the Snake chief, who also smokes, handing the cigarette to the next man, and thus along the line until consumed. A second cigarette has in the mean while been handed by the pipelighter to Sihongwa, which is smoked by him and the Antelope priests. A third cigarette is smoked by the asperger and pipelighter. The keléhoyas do not smoke.

After the smoking, Tobéngötiwa takes out all of the crooks and sticks on the west, Sihongwa those on the east side of the altar, except the crook at the extreme south end of each row. The long straight sticks are also left in their pedestals. A crook is given to each Antelope priest, each keléhoya, and to the asperger; the rest are laid on the floor. On one occasion—in 1898—some of the Snakes who had been on the snake hunt came in somewhat belated, and when it was found that the Snake priest had not brought enough whips with him, the Antelope priest handed them crooks. As it happened, one was handed a straight stick, which, however, was promptly refused. The Snake priest has in the mean while distributed the snake whips to his men, and the live snake, which he brought in the snake bag, to the Antelope youth. The latter grasps the snake with his right hand behind the neck and thus holds it throughout the ceremony. In his left hand he holds a tiponi, as has already been stated.

The chief Antelope priest now utters the following prayer: “Íta cákaokahkang pawásiotiwani” (We joyfully shall commence to hold this ceremony), whereupon the singing commences, generally at about half-past five o’clock in the afternoon. (See Pl. 164.) During the singing the sprinkler dips his aspergill into the medicine bowl every few minutes and asperges towards the altar, and upward. It has thus far been impossible to obtain the songs of this ceremony. Those few who know them refuse to give them up, and those who might be will-

ing to sing do not know them, or at least only partly. There seems to be no doubt about these songs being old, and important, and one of the reasons for the delay in publishing this paper has been the hope that I might succeed in obtaining those songs, which hope, however, has thus far not been realized.

When the singing has lasted about twenty minutes, the sprinkler lights the ómawtapi (cloud producer), a large cone-shaped pipe, which he has filled and laid down near the fireplace beforehand. After he has lit it, he kneels at the south edge of the altar, reverses the cloud producer, taking the large end between his lips, and then blows large volumes of smoke over the altar and into the medicine bowl. As soon as he has replaced the pipe, the pipelighter again lights three cigarettes, one after the other, which he distributes, and which are smoked in the same manner as the three before. The singing, however, is not interrupted by the smoking, which is very unusual.

The singing lasts about an hour; when it ceases all say “kwakwaí!” (thanks!) and the Snakes hand their whips to their chief, the Antelopes laying the crooks and sticks on the floor. Of the latter, Tobéngötiwa places those on the west, Sihongwa those on the east side into the pedestals, whereupon all silently wait for the third set of three cigarettes, which are lit and distributed by the pipelighter. The Antelope youth and maid, who, throughout the ceremony, have kept step to the singing, constantly walking up and down behind the altar, now faster, now slower, also silently wait, facing the altar. (See B, Pl. 163.) All smoke again as before, exchanging terms of relationship, such as inaa (my father), itii (my child), iwáwa (my elder brother), itópko (my younger brother), etc. At the smokes during these singings I never saw a pipe used, but only this corn-husk cigarette. After this smoke the Snake priest takes from the Antelope youth the snake and replaces it into the snake bag. The Antelope chief takes from him the típoni and corn-meal, goes to the keléhoyas and standing before them waves the típoni towards each of them, one after the other; first towards the head, then towards the lower part of the face, then somewhat lower down, and lastly towards the heart,<sup>1</sup> saying to each one: Um woyómii úh katci návokaonani (wúhtakwuwani (if male), wuhtihaskiwuwani (if female), You long your life will preserve (keep) and you will grow up (old men, old women).

He then steps back to the north-east corner of the altar, waves the típoni diagonally across the sand mosaic along the long string or púhu (road) as far as he can reach. This he does four times. Then he holds the típoni in front of himself and then utters the following

<sup>1</sup> On one occasion it seemed as if he aimed to wave towards the heart every time.

prayer: "Pai hápi ítam yep it shúan pasiónaya; hapi ówi yep it shúanpasíwtikat akw ítam páipu pas pai okiw akw móngwactotini pai pi okiwá. Hápi kush yáhpinen yúkiöq qöyángwun túpaka, sikángwun túpaka it wúktwuwilat nálönangup hóngkata; put ánga páisok pas pai ang nácungwitapwushkáhkangwu yúkiöq shúshngumok, shúshchawat wonúhkát akw páisok pas pai wúhtitokwantioní wúhtak tókwantioní pai pu okiwá. Ep óvahakai itáhtim nátpipake wúngwiotakam yáshe-hapi; páipu paspai okiwá; woyómi katici náwokawintani pai pu okiwá. Pai ówi ítam yan hakam túnátyaokahkango pai hálaikahkango öökáokahkango káwomii talöóngnawishni shópkawat sínomu; pas yaoí."

A free rendering of this would be as follows:<sup>1</sup>

Now, then, we celebrate (perform)<sup>2</sup> this here in the right manner. Hence, since we perform (or celebrate) this rightly we must certainly attain its objects,<sup>3</sup> okiwá.<sup>4</sup> Now, then, from here over to the white rising bluff, to the yellow rising bluff, this age-mark is standing at intervals.<sup>5</sup> On that you must be resting as you go along (through life),<sup>6</sup> over there at the last one, the shortest one standing, may you (lit., you must) fall asleep as old women, old men! okiwá! There somewhere above (?) our children, grown to different ages, are staying.

<sup>1</sup> It is extremely difficult to give a correct rendering of old Hopi talks and songs, partly because they are often interspersed with archaic words and forms, partly because they sometimes refer to ideas and facts, the meaning and significance of which are no longer understood. Even at the present day songs are often made for special occasions and referring to special facts in a few loosely connected phrases of words, so that even the participants in the singing cannot always give the full meaning of the songs. They say that the composer alone knows what he really meant to say.

<sup>2</sup> The word here rendered "celebrate" is generally used to designate any religious or ceremonial performance. Usually, however, "pavasiona" instead of "pasiona" is used.

<sup>3</sup> The word here translated "benefited by it" is another of those Hopi words which are difficult to translate, and which admit of different meanings. Sometimes it means "accomplish," "conclude." It is difficult to decide just what is meant. When making inquiries about it the author was told that the idea of the phrase was the wish that the ceremony might be accomplished or terminated in such a manner that the object might be reached, viz., to secure good living, a good subsistence for the Hopis.

<sup>4</sup> An exclamation denoting regret, pity, sympathy, etc., either with the speaker himself or with some one else. The meaning varies somewhat according to the context.

<sup>5</sup> Reference is here made to the crooks on both sides of the sand mosaic, which with the Hopi are the symbols of the different ages of life. Thus on a certain occasion, during the Wúwuchim ceremony, all the inhabitants of the village file by the kíva of the Singer Society and touch a crook, which is the nátsi (emblem) of that Society, as a prayer for a long life. The shortest crooks, the Hopi say, symbolize old age, because in old age men become smaller and use a shorter crook. While the crooks seem to symbolize more the different ages in life, the long string, laid diagonally across the sand mosaic, and along which the tipóni is waved, symbolizes the way of life. On one of the sand mosaics in the Katcina initiation ceremony the two are combined. (See Pl. LIII. The Powamu Ceremony, by H. R. Voth, published by the Field Columbian Museum.) The Hopi connects the idea of life with the east, death with the west. In different ceremonies the chief priest buries a long string road east of the mesa in a trench that runs eastward to the white dawn, the yellow dawn, the rising sun. When life is symbolically spoken of as a journey, the thought predominates that this journey goes eastward; but when the dead are spoken of they are always supposed to travel westward from the grave, which they are supposed to leave on the fourth day.

<sup>6</sup> The meaning probably is: As men rest themselves on staffs and crooks when they are weary may you so find rest, solace, and comfort all through life when you are weary.

Surely okiwá! Now, then, thus being concerned with (occupied by) this, being happy, being strong, all the people proceed towards to-morrow (towards) mornings.<sup>1</sup> Thus be it!

The Antelope chief then hands the típoni and meal to the Snake chief, who goes through the same performance, first in front of the novices, expressing there the same wish, and then at the northwest corner of the altar, saying essentially the same words as the Antelope priest. If the two differ at all it has not been ascertained just what the variations are. When he has finished, the Snake chief hands back to the Antelope chief the típoni and the meal, sprinkles a pinch of meal over the altar, picks up the snake bags and whips and leaves, the other Snakes, including the Snake novice, following, each one also sprinkling meal on the altar. At the foot of the ladder they stop, and the chief priest says: "Pai ítam hálaikahkango, öökáokahkango, talðongnawicni." Well, we happily, courageously, go (on) towards the morning.

While the Snakes file out to go to their own kíva the Antelopes wait in silence, the chief still holding the típoni, the girl the bátñi, until the last Snake has left the kíva. All now sprinkle meal to the altar and Tobéngötiwa replaces the típoni, first waving it a few inches above the ground from the six directions towards the center of the place on which it stands. Hereupon Sihongwa takes the ceremonial costume from off the girl, while the Antelope youth disrobes himself. Some one removes the nákwas from the scalplocks of the novices. These as well as the two costumes are placed on the floor near the altar. Sihongwa washes the hands and feet of the Antelope maid, but her face she washes herself. The Antelope youth washes himself except the marks on his back, which he cannot reach, and hence are washed off by Sihongwa.

The Antelope youth and maid then seat themselves on the banquette east of the fireplace. The chief priest takes a black eagle wing feather from the altar, steps in front of the two, hands to each a piece of some root, probably hohóyaonga, which they chew, takes a pinch of ashes from the fireplace and then hums in a low tone a song, beating time to the singing with the feather which he holds in his left hand. Soon he waves the feather along the front part of the body to the knees, first of the girl then of the man, circles the feather in front of them a few times and then, turning towards the ladder, points the feather towards the hatchway, sprinkles a small quantity of the ashes along the feather and toward the hatchway. He then repeats the

<sup>1</sup> In the morning the priest says: "towards the evening." Here not the cardinal points, but the time of day is referred to.

performance just described from five to seven times, the number of times differing on various occasions, although it is believed that six times is the proper number. When he has done, he returns to his place, laying the feather on the floor near the altar. The youth and maid rise, spit the chewed roots into their hands and rub their hands, legs, and body with it. Hereupon they take from the meal tray a pinch of meal, sprinkle it towards the altar, and the girl then leaves the kiva. The man joins the other men, who after the ceremony generally sit around, chat and smoke a while, and then take their supper. The Antelopes eat no meat or any food containing salt on this and the three succeeding days; the chief priest eats only one meal daily—late in the evening—during the same period. The Snakes, after having arrived in their kiva, smoke, converse, take their supper, smoke again, and then retire for the night. They, as well as the Antelopes, sleep in or on their respective kivas as usual.

## SIXTH CEREMONIAL DAY.

(SHUSH KA HÍMUU; ONCE NOT ANYTHING.)

Early in the morning the Antelope chief brings to the Snake kiva the tray with the four báhos and four chochókpis that he had made on the previous morning, and that had been lying on the west side of the sand mosaic during the day. With the báhos were some nakwák-wosis, but just how many I failed to learn. These prayer offerings are usually deposited by Antelope priests, though sometimes by the Snakes, south and west from the village at four different places near trails. This, however, has not been substantiated, as I never went with those messengers. These offerings are repeated every morning for three days, with the exception, however, that they are deposited closer to the village on each succeeding day.<sup>1</sup> Soon after the Antelope priest has returned to his kiva the Snakes prepare for the morning ceremony in the Antelope kiva. As on the previous evening, the chief priest takes with him the snake whips, the bag with the snake, and all take some corn-meal and then proceed to the Antelope kiva. Here they and the Antelope priests arrange themselves in the same manner as on the previous evening and exactly the same performance, as far as could be ascertained, takes place as on that occasion. As that performance has been fully described on previous pages it does not seem necessary to repeat the description. I have repeatedly tried

<sup>1</sup> This same custom prevails in other ceremonies, in some, for instance the Flute, the báhos being made shorter each succeeding day, so that the last one is only about one inch long.

to obtain some of these songs, but have thus far failed. Even a partial recording of the songs while they are being chanted, possible in other ceremonies, has been impossible in this ceremony, for three reasons: First, the words are pronounced less distinctly than is usually the case, and the singing is mostly low and humming; secondly, the intervals between the songs are unusually short, so that it is not always possible to find out where one song ends and the next one begins; thirdly, the jingling of the bells of the Antelope youth and maid increases the difficulty to catch words and sentences. I am told that some of the songs are not understood even by the priests, as the language used is not understood by the Hopi.<sup>1</sup> Repeated efforts to get at least the number of songs chanted, lead me to believe that there are sixteen, though this is by no means certain.

The Snake novice of 1896, who sat with the Antelope novices on the previous evening, seemed to be considered a full *tcwúwimka* now, as he sat with the other Snake priests and participated in the singing from this day on.

After the ceremony, the Snakes return to their *kíva*, the chief priest however now saying at the foot of the ladder, “*Pai ítam cákaokahkang tápkinawicni*” (Now, we being strengthened, again go forward to the evening).

Breakfast is then partaken of in both *kívas*, whereupon Tobéngötiwa at once proceeds to make the four green *báhos* and four *chochókpis* and places them on the west side of the sand ridge again to be consecrated during the day and deposited the next morning, as has already been stated. Usually nothing of special importance takes place in the Antelope *kíva* during the day. Only in the afternoon, the sprinkler begins to make two *chochókpis*, about fourteen inches long, and two *qöngötkis*.<sup>2</sup> The latter consist of a stick about two inches long and three-fourths of an inch in diameter, which is painted black, with the exception of the ends, which are painted green. To the middle of the stick is attached a small eagle feather *nakwákwosi*. These cylinder-like objects are said to represent the small clay balls (“*qöongá*”) which are formed by the water in the washes, and they are considered to be special prayer offerings that the washes may rise and flood their thirsty fields. These cylinders and the two long *chochókpis* are placed near the altar, there to be consecrated, as it were, for use later on. Some of the Antelope men go to their fields; those who remain spend their time in smoking, eating, chatting, sleeping, etc.

<sup>1</sup> This pertains to nearly all Hopi ceremonies. The priest when asked where these songs come from, almost invariably points to either Zuñi or the Pueblos of New Mexico.

<sup>2</sup> These *qöngötkis* (from *qöongá*, ball—*tüki*, cut—because cut from a stick) are made on many occasions in Hopi ceremonies.

In the Snake kíva the same condition of affairs exists as on the previous day. The kíva is deserted, only one man usually being left in charge of the kíva. Soon after breakfast the men get ready for the Snake hunt and leave at the usual time.<sup>1</sup> If there be any newly initiated members they participate in the hunt, and are supposed to capture their first snake. I was told that the hunters do not confine themselves to any particular direction on this day. They return in time for the evening ceremony in the Antelope kíva. After having indulged in their usual smoke around the fireplace they renew their body decoration, which, however, they sometimes do somewhat hastily, and then repair to the Antelope kíva in the usual manner, where the same ceremony as that which has already been described, takes place.

## SEVENTH CEREMONIAL DAY.

(PÍKTOTOĀ; PÍKI—PROVIDING DAY.)

Unfortunately, the proceedings of the forenoon of this day have been observed in 1898 only, and hence my notes on the first part of this day are somewhat incomplete. The following is based on these notes:

Early in the morning the usual singing ceremony took place in the Antelope kíva. This was followed by a short rest, smoking, chatting, and then by the morning meal and another period of rest and smoking in both kívas. In the Snake kíva some also carded cotton, made and repaired moccasins, and other paraphernalia used in the ceremony. Macángöntiwa made ten so-called pútsvahos (flat báhos), in which he was assisted by two or three of the other men. These báhos consist of a small slab made of cottonwood root about seven inches long, two inches wide, and a quarter of an inch thick at the edges, one-half an inch thick in the middle. They are first painted white, and then one half green, the other yellow, both sides of the slab being painted alike. The two colors are separated by a black line, which runs along the middle of the báho, and which is marked with several, usually three, white, elongated dots. Into each end of the slab is thrust a small eagle feather. On each edge, about an inch from each end, are two notches about half an inch apart.

At about eleven o'clock all the snakes were transferred without any special ceremony from the small buckskin bags to a large American sack and placed on the floor near the altar. The small racer that

<sup>1</sup> As has already been noted, very little hunting was done on the fifth day in 1896, and I was told that very little hunting for snakes was done on any day after the first four days if a sufficient number of snakes were found on these last named days.

was used in the ceremonies in the Antelope kíva remained in the buck-skin bag in front of the fetishes until the ninth day.

While the chief priest, assisted, as has been stated, by others, made the flat báhos, several of the men began to make or repair their so-called *tcú-nakwas*, which consist of a bunch of eagle breath feathers, all stained red, and of bluebird wing and tail feathers.<sup>1</sup> Of the latter, two were tied together by the quill ends in such a manner that they spread apart and these were then fastened to the tips of the eagle feathers. These “head-dresses” are worn at the public performance on the ninth day. Two Snake costumes were also put in order to be used by two of the men later on, when they were to act as *käléhtakas* (warriors). These two men, Pühúnömtiwa and Qōtcvoyaoma somewhat later, made some so-called *käléhtak* (warrior) báhos; the first made four, the latter five. These consist of a single, undecorticated stick, about seven inches long, to the upper end of which is fastened a short eagle wing feather, and at about the place where this feather is fastened is tied an eagle nakwákwosi and a packet, made of corn-husk, containing presumably the usual pinch of corn-meal and honey. A few such báhos are made in nearly every Hopi ceremony.

While the paint on the flat báhos, previously referred to, was drying, Macángöntiwa made six common double green báhos and Cúkoma four. All who made báhos placed them on the floor in front of themselves, and then smoked over them, and when later on the ten flat and nine warrior báhos were completed, they were placed on a tray and Macángöntiwa and the two warriors again smoked over them.

Thus far my notes on the proceedings in the Snake kíva during the forenoon. Before recording those of the afternoon, which have been observed several times, I shall give a brief description of the doings in the Antelope kíva during the forenoon, which, as already stated, have also been observed only once (in 1898).

It has already been observed that early in the morning, the usual mutual morning ceremony took place in the Antelope kíva, which was followed by an interval of rest, conversation, smoking, and the usual morning meal. After breakfast the priests occupied themselves in various ways, repairing moccasins, smoking, making prayer offerings, etc. Of the latter, the following were made, as far as recorded, though I am uncertain whether my notes in that respect are complete:

Tobéngötiwa made fourteen double green báhos and seven

<sup>1</sup> In the village of the second mesa a bunch of owl feathers, in addition to those mentioned above, is used.



A



B



PL. CLXV. THE LIGHTNING FRAME.

- A. The lightning frame closed.
- B. The lightning frame open.

This Plate has otherwise no bearing on the ceremony described in this paper, but shows some katcínas, the one having the lightning frame being the Sótukv-nangwu katcína. This negative was used, because, of the Snake ceremony, none showing the lightning frame was obtainable. It should be stated however, that the frames are usually smaller than the one shown on this Plate.

ОЧИСЛЕННЫЕ РАСЧЕТЫ

Приближенные формулы для  
расчета давления

в гидравлических системах с однородной жидкостью и постоянным диаметром трубы. Выведены формулы для расчета давления в гидравлических системах с однородной жидкостью и постоянным диаметром трубы. Выведены формулы для расчета давления в гидравлических системах с однородной жидкостью и постоянным диаметром трубы.

chochókpis, Kárzhongniwa assisting him. Four of each of these were placed on the west side of the sand mosaic, again to be deposited the next morning. What was done with the others was not definitely ascertained—most of them were sent away to distant places.

Kiwánhoya made two black chochókpis, about fourteen inches long, four short ones, about five inches long, four double green báhos, two wheels, and he finished two qöngötkis (cylinders), already described on a previous page. The wheels are made of the leaves of a plant called in Hopi "wipo." First a ring from two to three inches in diameter is formed of some of the narrow leaves, and this ring is wrapped within another leaf, and the whole is then painted black. Into two sides of the wheel are thrust four duck feathers and to a third side is fastened a nakwakwosi of a duck feather. One of these two wheels and one cylinder, Kiwánhoya tied to one of the long chochókpis, the other cylinder and wheel he tied to the other chochókpi, and then placed one on each side of the medicine bowl.

Mokáhtiwa made four púhus, the strings of which he painted red.

Thus far, my notes on the proceedings in the Antelope kíva during the forenoon. We now again proceed to the Snake kíva to note the events transpiring in that chamber in the afternoon.

Besides repairing of moccasins and other paraphernalia, and spinning of cotton, four lightning frames (see Pl. 165) are repaired for use by the two warriors. As this is not a regular snake hunting day, some of the men sometimes go out in the afternoon, still trying to find some snakes. Some hunting was done every year except in 1896. At about three o'clock, Macángöntiwa takes a tray containing, as nearly as I could learn, the flat báhos, the warriors' báhos, four or perhaps six double green báhos, and a number of nakwákwoxis which have been made in the Snake kíva, also a bullroarer, some honey and meal, and repairs with this tray to the Antelope kíva, where he and the Antelope chief smoke over them. A part of them are then handed to one of the Antelope priests, who is to take them to a distant place, as will be presently described more fully; the rest he takes back to the Snake kíva, placing the tray on the floor near the altar. Nothing of special importance transpires after this in the Snake kíva. When the time for the evening ceremony approaches the Snakes again redaub their bodies, comb their hair, put on their common kilts, and proceed to the Antelope kíva in the manner already described.

Nothing of any special importance occurs in the Antelope kíva during the first part of the afternoon. Besides the usual four green and four black báhos that are lying on the west side of the sand mosaic I noticed on one occasion two green báhos and one large

chochókpi on the south-west corner of the sand mosaic, and two báhos with the corn-ears of the novices on the south side of the altar.<sup>1</sup> On one occasion I noticed that a number of nakwákrosis, that had been made by different men, were taken out by a small boy, but I failed to learn the particulars about it.<sup>2</sup>

The messenger, already referred to, who is to get the water for the race that is to take place the next morning, must belong to the Bátki clan, or some clan related to it, such as the Píhkash (Young Corn Ear) or Ómawu (cloud) clan. The water on this day is gotten from Túhcíwa, a spring about three miles, or from Toríva, a spring about ten miles south-east from Oráibi. Usually the messenger does not return to the village the same day, but sleeps in the valley at the place where the race starts the next morning. If he be, as is not usually the case however, an elderly man, or if it rains, he returns to the kíva, hands the water, etc., to the Antelope priest, who smokes over it. He then sleeps in the kíva, and returns to the starting-place of the race very early the next morning, taking with him the móngwikuru with water to which is tied a small corn-ear and one of the large chochókpis with the wheel and cylinder.

When starting for the spring he takes with him from the Antelope kíva the following objects: The móngwikuru with the óbjects attached to it, as just mentioned, a ball made of clay by the Antelope chief, a long buzzard wing feather, an eagle-bone whistle (tötöqpi), some corn-meal, corn-pollen and honey, and a number of báhos.

From the Chief Snake priest he receives: a bullroarer, meal, honey, some warriors' báhos, and some flat and green báhos. All these objects are wrapped into an old ceremonial blanket (atöö), which he ties by its corners and hangs over his left shoulder. The water vessel with the objects attached to it he holds in his right hand. He is attired in a white, unembroidered kilt and moccasins only, but takes with him a blanket for the night. When he is ready to start, the two chief priests say to him, "Pai um hálhaiákang áohakámini!" (Now gladly you will go somewhere!); to which he replies, standing at the foot of the ladder, "Úma hálhaiákáhkang nui núhtaita" (Joyfully you wait for me), and then leaves. Hereupon the Snake chief picks up his tray and takes it to his own kíva, as has already been stated. The Antelope chief sits down near the fireplace and smokes.

Shortly after the time for the ceremony is announced to the

<sup>1</sup> They were undoubtedly those made by the sprinkler during this day, and were given to and disposed of by the water carriers and the race winners later on.

<sup>2</sup> While revising this manuscript one of the priests tells me that these were offerings to Téwápontumsi or Tíhkuywuhti. (See the chapter, "The Snake Legend," of this paper.)

Snakes, who at once proceed to the Antelope kíva in the same manner as before described, being arrayed in their common kilts only, and the singing ceremony is gone through in the same manner as already described. In 1898, when Sihongwa had been sent away as messenger, Lomáyeshtiwa took his place at the north-east corner of the altar. On one occasion one of the Antelope priests brought a little novice in at this juncture, gave him a white corn-ear, after making him sprinkle a little meal to the altar, tied the usual nákwa into his hair, and seated him on the floor east of the sand mosaic, sitting down by his right side.

While this ceremony is going on in the usual way, we follow the messenger to the distant spring and see how he disposes of the prayer offerings that have been intrusted to him and how he obtains the water he is sent to get. The information about this errand, however, is not based upon personal observation, but was furnished me later, by one of the Antelopes, who acted as messenger one time. As he is a personal friend of mine, I have reason to believe that his statements are true,<sup>1</sup> as far as he could give them.

Descending the mesa on the main trail leading towards the south-east, he soon came upon a place called Kurítvahchikpu. Here he first twirled the bullroarer, deposited a pinch of meal, put a drop of honey into his mouth and spurted it into the air, and then deposited the following prayer offerings: One green báho, made by the Antelope priest, one chochókpi, made by the asperger, and numerous nakwákwosis, made by the men of both fraternities.<sup>2</sup> Proceeding along the trail towards the south-east, he soon arrived at a place that seems to have no special name, where he went through the same performance and deposited the same prayer offerings. At Kükákwūshchomo, a short distance farther south-east, he does the same. About a quarter of a mile farther on is the place from where the race is to start the next morning. Here he went through the same performance and deposited similar objects. The four places thus far mentioned are located in the broad valley east of Oráibi. Leaving the last-named place the messenger left the trail and proceeded due east towards a large mesa on the south side of which, about-half way up, is located

<sup>1</sup> The name of the man is not given, as he asked me not "to tell on him," and would be unnecessarily subjected to severe censure were this publication shown to the societies mostly concerned.

<sup>2</sup> As to the kind and number of báhos taken along and their exact disposition, the statements of this messenger and another one who got water once, and those of a racer who passed the places where the báhos are placed are so conflicting that personal observation only will probably settle that point. The fact that these men perhaps get water only once or twice in their lifetime, and have so many báhos to dispose of, and these at five different places, may account for the conflicting statements; in fact, they say they have forgotten some of the details.

the spring Túhcíwa, to which he was going. Arriving within a short distance of the spring, he stopped and twirled the bullroarer and blew his eagle-bone whistle to announce, he said, to the water deities (the Balōlökongwuu and Clouds—the latter in this connection being considered personifications) his presence. Approaching a little nearer, he blew the whistle again. Going still nearer he did the same thing, repeating it a fourth time. Hereupon he deposited the last báhos and nakwákwoxis, the same as at the other places, and also one flat and one warrior báho, and then, with his face turned toward the spring, uttered the following prayer:

“Taá nu yep it umúngām kíva. It akw nu úmuya chámto. Úma ówi it nácíkahkang púu yang itáh tígí angyóknagani. Púu íma pavónnmamantu put akw óni náwungwnakang nátukvcinayaq; púu ita put conaikahkang yep tálat ep hálhaigani. Yan úma itámungem kuwánqölölayaq ita anghálaiyani. Púu put íma itáhpokomu nónove tíwat hálhaigani. Púu shóshoyam híhihtú akwlólomatoti. Pántakat ówi ítam máksoniyungwa. Pas pai óvi ókio pántani! Ówi um itámui ókwatotwani. Pai tumá. Ítam shóshoyam áoyani. Ówi ka hak háki fñalni! Úma shóshoyam inúngkyani!”

#### TRANSLATION.

Now, then, this here,<sup>1</sup> I have brought for you. With this I have come to fetch you. Hence, being arrayed in this, thus rain on our crop! Then will these corn-stalks be growing up by that rain; when they mature, we shall here in the light,<sup>2</sup> being nurtured,<sup>3</sup> be happy. When you thus beautiful grasses (herbs) will provide bountifully, we shall be glad over them. Then these our animals when they eat (lit., as soon as they eat, or upon eating) will also be happy over it. Then all living things will be good (in good condition). Therefore do we thus go to the trouble of assembling.<sup>4</sup> Hence it must be thus.<sup>5</sup> Therefore have pity on us! Now let us go! We shall all go.<sup>6</sup> There (let) no one keep any one back. You all follow me.

<sup>1</sup> Refers to the prayer offerings.

<sup>2</sup> The meaning of this expression is somewhat obscure. My informant thought it was an archaic way of saying “in this life.”

<sup>3</sup> Namely, by the corn. The word is also used in Hopi to express the idea of transmitting health into a patient by rubbing the germ of a healthy grain of corn over, or as they say into, his body, or of conveying new vigor and soundness into a corn ear whose soundness is doubted by introducing into its core healthy grains of corn, etc.

<sup>4</sup> Máksoniyungwa. It is almost impossible to give the literal meaning of this term in one word. The first part means “troublesome,” “weary,” “tedious;” the second “go in,” referring to the “going into” the kiva or “assembling” for the ceremony.

<sup>5</sup> I. e., as the messenger has just said.

<sup>6</sup> I. e., the clouds, which are here personified, and which he has addressed.

He then enters the spring, lowers the little netted gourd (*móngwiku-*  
*kuru*) into the water to the rim, sprinkles some meal into it from the  
 six cardinal directions, and then dips some water into it with the long  
 buzzard feather, also from the six ceremonial directions. He then  
 does the same with the corn-ear and then fills the vessel, whereupon  
 he leaves the spring and returns to the village, twirling the bullroarer  
 all the way until he arrives at the edge of the mesa. Arriving in the  
 kíva all say "Kwakwái um pító" (Thanks, you have come). The chief  
 adds, *Íta pas pai akw móngwactotini*" (We must bring this to a con-  
 clusion).<sup>1</sup> The things are then placed on the floor north of the fire-  
 place and Tobéngötiwa, assisted by some of the older priests, smoke  
 over them. Usually, however, as has already been observed, the  
 messenger does not return to the kíva, but remains at the place where  
 the race starts early the next morning.

Nothing of importance occurs in either kíva after the ceremony,  
 smoking, talking, the evening meal, etc., occupying the evening until  
 the time for retirement.<sup>2</sup>

## EIGHTH CEREMONIAL DAY.

(TOTÓKA; FOOD PROVIDING.)

The men in both kívas are stirring at a very early hour. At about  
 three o'clock the fire is built. The first to get ready is the messenger,<sup>3</sup>  
 who got the water from a distant spring on the previous evening, and  
 the two kaléhtakas (warriors) in the Snake kíva, who are to play a  
 conspicuous part in the proceedings of this and the next morning. At  
 about half-past three o'clock the warriors put on their snake kilts,  
 take the lightning frames and bullroarers and leave the kíva. Outside  
 they shoot the lightning frame toward the east and then go around  
 the kíva five times, twirling the bullroarers almost constantly. They  
 then proceed to the Antelope kíva and repeat the same performance.  
 Returning to their kíva they go around again three times twirling the  
 bullroarer. Entering the kíva they again shoot the lightning frame  
 and go around in an elliptical circuit, swinging the bullroarer several  
 times. They then take off their snake kilts. On one occasion the  
 chief priest came in at this juncture, seemingly just having gotten up,

<sup>1</sup> See footnote 3 on page 41.

<sup>2</sup> I find in my notes of 1896 the following observation: Before the Snakes had filed out a woman brought some food which Sihongwa took into the kíva, stepping into the deeper portion east of the ladder, going around the fireplace and on to the elevated portion west of the ladder, depositing the food on the floor. I do not remember ever having seen a female in either of the two kívas, with the exception of the Antelope maids and some little novices.

<sup>3</sup> Provided he did not remain in the valley when bringing the water the previous evening.

and at once engaged in smoking, in which the two warriors, taking off the moccasins from their feet, joined him.

Later, usually at about four o'clock, the warriors again put on their kilts, shoot the lightning frame, and circle around in the Snake kíva, repeat the same outside at the Snake and the Antelope kíva, and a second time outside of and also in the Snake kíva. The number of times they go around the kivas varies between three and seven times, but it is believed four times is the number intended.

At about half-past three o'clock the rest of the men of both societies rise. The two warriors daub their bodies in the usual manner, but this time rub considerable cútá on their faces. They put on their snake kilts, buckskin-fringed belts, and also, I am told, their snake head-dresses (*tcú-nakwas*), though my notes fail to state that. They then repeat their procession, twirling of bullroarers, etc., around both kivas and in the Snake kíva.

All the Snake men now renew their body decorations, as the so-called Antelope race is about to begin. At about a quarter of five o'clock in the morning the two warriors take a number of flat and other báhos from the tray, and then repeat for the fourth time the processions around the kíva, but instead of returning to the Snake kíva they leave the mesa on the trail, leading south-eastward, which the messenger had taken on the previous evening and on which, in case he slept in the village, he has already preceded them to the starting-place of the race, about to begin. At the different places where the water carrier has deposited his báhos they deposit theirs, in the following manner:<sup>1</sup> After having turned the green báho of the water carrier around, i.e., turned its facet toward the village, and having pulled out the water carrier's *chochókpi* that stood south-east from the green báho, with its face turned from the village, and thrust it into the ground north-west of the green báho facing now towards the village, the first warrior thrusts a flat báho into the ground between the green báho and *chochókpi*; the second warrior a red warrior's báho at the place where they have taken out the *chochókpi*. At the next place they repeat the performance, only here, the second warrior puts down the flat báho and the leader the red *kaléhtak* (usually "tak") báho, etc. As they go along they frequently turn their bullroarers. Other men and boys who intend to participate in the race join, follow, and pass them, going to the starting-place. Sometimes one or two others of the Snake Fraternity have bullroarers, too, that they swing

<sup>1</sup> It has already been stated in a previous footnote that some confusion exists concerning the prayer offerings of the water carrier. But after sifting all the information obtained on the subject from different men, it is believed that the disposition of the prayer offerings is supposed to be made, and usually is made, in the manner given in the text.

occasionally. At the starting-place the báhos, I understand, are mostly deposited at one end of the line of racers. But if more than the required number have been made, which is sometimes the case, as has been mentioned in a previous footnote, they are deposited at the other end. A number of men and boys have in the mean while left the village and have gone to the cornfields in the valley to get green corn-stalks, the disposition of which will be mentioned later on.<sup>1</sup> While thus the race is being inaugurated in various ways, we direct our attention to the Antelope kiva, where the necessary preparations are made for the exercises that are to interlink with the race at the proper time.

At about five o'clock Tobéngötiwa has made a new meal circle around the kiva. The Antelope youth and maid are dressed and painted up, the nine cigarettes ready, the four báhos that were made the previous day deposited; in fact, everything prepared as usual. At about half-past five o'clock the Snakes are called. Usually only the chief priest and one or two of the older men come, as the younger Snake members participate in the race, as explained, and two or three of the older men, decorated and dressed the same as the two warriors, have gone to the edge of the mesa in order to sprinkle the racers with sacred meal upon their arrival on the mesa. Usually these men go down the mesa, too, and return with a stalk of green corn. Whether they get these from the fields themselves or obtain them from others at the foot of the mesa, I am unable to say, but have reasons to believe that the latter is the case.

As soon as the Snake priests have seated themselves, the usual smoking of cigarettes takes place, the crooks and snake whips are then distributed, the típoni and snake handed to the Antelope youth, the bátni, with its contents, to the Antelope maid, in fact everything is made ready to begin the singing ceremony at a moment's notice, whereupon all silently wait for the signal to commence the singing. The manner in which this signal is given will be described presently. We now again turn our attention to the race. I have never witnessed the ceremonies at the starting-place, but have reasons to believe that the following description, furnished me by participants, is correct: The first one to arrive at the place<sup>2</sup> where the race is to begin is the messenger who got the water in a móngwikuru on the previous evening. He has with him this vessel, a púhu, and one of the long chochókpis

<sup>1</sup> Some of the members of both fraternities also get cornstalks from the cornfields, others swarm along the race track, and all join the racers as they arrive from the starting-place and race along, but no participant in the ceremony is allowed to contend for the prize.

<sup>2</sup> Usually he sleeps there, as has already been stated elsewhere.

with the rain wheel and the small cylinder,<sup>1</sup> prepared by the sprinkler on the seventh day. Soon after his arrival the two warriors put in their appearance. They have deposited at each of the three places already mentioned a flat, a warrior's (red), and probably also a green báho and some nakwákwois and corn-meal.<sup>2</sup> They also have been swinging their bullroarers and shooting their lightning frames while en route to this place. With and soon after them, arrive the would-be participants in the race. When all are assembled, the water carrier rubs a little clay into the men's hands and then lays the púhu on the trail, pointing out, as it were, the way to the village. He then faces the men who have drawn up in line across the trail, and says:

“Pai íta háhlaikahkang<sup>3</sup> yúhtukni. Ówi úma tótim, hóhongwitu, shush ka nátūshitotani! Nap hákawat mónik yámakat ítam put átswi táwat ka náshami pítöq híyanikae. Túnátyaokahkango ímui itángumui, itánamui kiyamayui yaíwawicni, yúngwicni; pai háhlaikahkango, öökáokahkango! Taá tumai!”

#### TRANSLATION.

Now we shall race joyfully. Hence you strong young men do not once detain each other!<sup>4</sup> Whoever comes out ahead, on his account<sup>5</sup> we shall drink<sup>6</sup> when the sun has not yet come half-way.<sup>7</sup> Being concerned (about this) to these our mothers, our fathers, to the village, we shall ascend, we shall enter it, happily, courageously. Now go we!

The messenger then speeds away and soon the racers say to the warriors: “Taá íta paíyyani; pai pi yapní” (There, be we off; he is already off).

After a few seconds they repeat their clamoring: “Taá íta paíyyani” (now let us be [be we] off). And after a short interval, during which their impatience has been growing, they say: “Taá, íta paíyyani; pai pi táwa yáma” (Now be we off; why the sun is already up). Each of the two warriors then repeats the water carrier's speech—

<sup>1</sup> The other one I noticed in the morning at the south side of the Antelope altar. Their use will be explained by and by.

<sup>2</sup> The information as to the exact kind and number of báhos these warriors take along, and just where and how they deposit them, is also conflicting, and will need further study by special personal observation.

<sup>3</sup> Here the warriors afterwards say “cúkaokahkang”

<sup>4</sup> I. e., do not try to win by keeping others back, but by honestly exerting yourself.

<sup>5</sup> Because the winner receives the sacred water as a prize, which is believed to bring rain, as will be explained later on.

<sup>6</sup> It was explained to me that the messenger here speaks in behalf of the thirsty crops, for which this ceremony is celebrated, for which he is sent to fetch the clouds, and which are eagerly waiting to drink the expected rain.

<sup>7</sup> By this the anxiety is expressed that the looked-for rain should not procrastinate, but come soon.



A



B



Photo by Oscar Depew.

**PL. CLXVI. SCENES AT THE EDGE OF THE MESA.**

- A. Corn-stalk bearers begin to arrive at the edge of the mesa.
- B. Spectators waiting for the arrival of the racers.





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**PL. CLXVII.**

Racers arriving at the edge of the Mesa.

## IV. VARIOUS

RESULTS AND DISCUSSION



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**PL. CLXVIII.**

Priests sprinkling the racers with corn-meal.





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ANTHROPOLOGY, PL. CLXIX.



**PL. CLXIX.**

Priests sprinkling the racers with corn-meal.

$$g_{\alpha}(\mathbf{t}, \mathbf{D}) = \alpha_0 \delta(\mathbf{t}) \exp\left(\frac{\beta}{2}\text{tr}[\mathbf{D}] \right) \exp\left(-\beta \frac{1}{2}\text{tr}[\mathbf{D}^2]\right)$$

verbatim, my informant claims—the water carrier speeding on while they do so. After they have both repeated the speech, both twirl their bullroarers and shoot their lightning frames, and then they also start, but both describing an elongated half-circuit from and again to the trail, one on one, the other on the other side; where they meet each one crosses to the opposite side and again runs in a half-circle from and again to the trail, but always making towards the village. This they do four times in all. At the places where they cross the trail they shoot the lightning frames. When they cross the first time the racers give a yell which is the signal for the priests in the Antelope kiva to commence the singing. This signal is transmitted to the kiva in the following manner. At the edge of the mesa is seated a man and on one of the houses close to the kiva, sometimes on the kiva roof, a woman. As soon as the man hears the yell he jumps up and immediately the woman notifies the men in the kiva that the racers have started, whereupon the singing commences.

It has already been stated that the water carrier had run ahead with the water vessel. To the one that overtakes him first he hands the vessel and the long *chochókpi*<sup>1</sup> and then runs on with the racers. Those things now become the objects of contention for the racers. If one overtakes the holder of them the latter has to hand them over to his successful rival, and he to the next one, if one overtake him, etc. Along the route the racers are met by the participants in the ceremony from both kivas, who, as already stated, do not really participate in the race, at least not the entire length of the route, but join the racers along the route after having deposited prayer offerings in the shrines. Those (two I believe) from the Snake kiva who have bull-roarers twirl them occasionally. Nearer and nearer the line of racers approaches the mesa. Those who have gone after corn-stalks have in the mean while gathered at the foot of the mesa to greet and then accompany the racers. Some of the smaller boys await them on ledges higher up. The edge of the mesa is usually lined with hundreds of spectators (see Pl. 166), whose eyes are turned towards the valley four hundred feet below. At the place where the trail reaches the top of the mesa stand several grim-looking snake priests, in their usual costume and decoration, with their bags of sacred meal to sprinkle the racers as they sweep by them. (See Pls. 167, 168, and 169.)

Shortly after sunrise the first racers arrive at the edge of the mesa panting and bathed in perspiration. The first one carries the netted gourd vessel and the *chochókpi*. He is preceded and accom-

<sup>1</sup>This may be done anywhere before he reaches the kiva. If no one overtakes him he takes it into the kiva himself, where it is taken care of in the usual manner, and then handed to the first racer reaching the kiva.

panied by others, who carry corn-stalks. (See Pl. 170.) The two warriors are also usually among the first to arrive. Those of the Snake and Antelope priests who have brought corn-stalks throw them into the crowd and dash on towards the Antelope kíva, which they enter, taking their accustomed places. Events now crowd themselves in front of the village and outside and inside the kíva, but will have to be described one after the other, although they are coincidental.

It has already been stated that the men and boys who have gone after corn-stalks greet the racers at the foot of the mesa and follow them. Having arrived at the top of the mesa, they form a squad and approach the village (see Pl. 171), being accompanied by the crowd of spectators, among whom may be seen here and there a struggling racer, who, however, runs on to the village. In front of the village are crowds of women, girls, and children (see Pl. 172), who await the corn-stalk bearers, and as soon as the latter have arrived within about one hundred yards, dash towards them and engage with them in a pell-mell wrangle (see Pl. 173), trying to snatch from them the corn-stalks and also squash blossoms, in which they are generally successful after a short struggle. If here and there a specially strong or alert young man shows a tendency to be obstinate, he is quickly pursued and surrounded by such numbers that his surrender is usually only a question of a few minutes. The captured corn-stalks are triumphantly carried by the winners to their homes (see Pl. 174), where they are often placed on corn piled up in the back rooms.

But proceed we now to the Antelope kíva, where in the mean while important events have been in progress. We first turn our attention to the winner of the race. Upon his arrival at the kíva he takes a position outside and east of the kíva. As soon as his presence is announced by himself, by stamping repeatedly with his foot, the sprinkler comes out and takes from him the objects he has won, first sprinkling a little meal on them and towards the kíva, and takes them into the kíva, where he hands them to Tobéngötiwa. He then takes one of the báhos that have been lying at the south-west corner of the altar and kneels before the Antelope priest who, still holding the objects won by the racer, utters in a low voice a prayer, whereupon the Snake chief takes the objects, also utters a prayer, and then hands them back to the sprinkler, who takes them out and hands them to the winner with a double green báho, a small sack of corn-meal, and digging stick. (See Pl. 175.) He first seems to express a prayer or good wish and then gives some instructions to the boy, who thereupon goes down to the valley to one of his fields, where he digs a hole with the digging stick, as deep as the length of his arm, into which he throws a few



**PL. CLXX.**

Corn-stalk bearer looking for the racers.

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**PL. CLXXI.**

Corn-stalk bearers approaching the village.







**PL. CLXXII.**

Villagers awaiting the corn-stalk bearers.

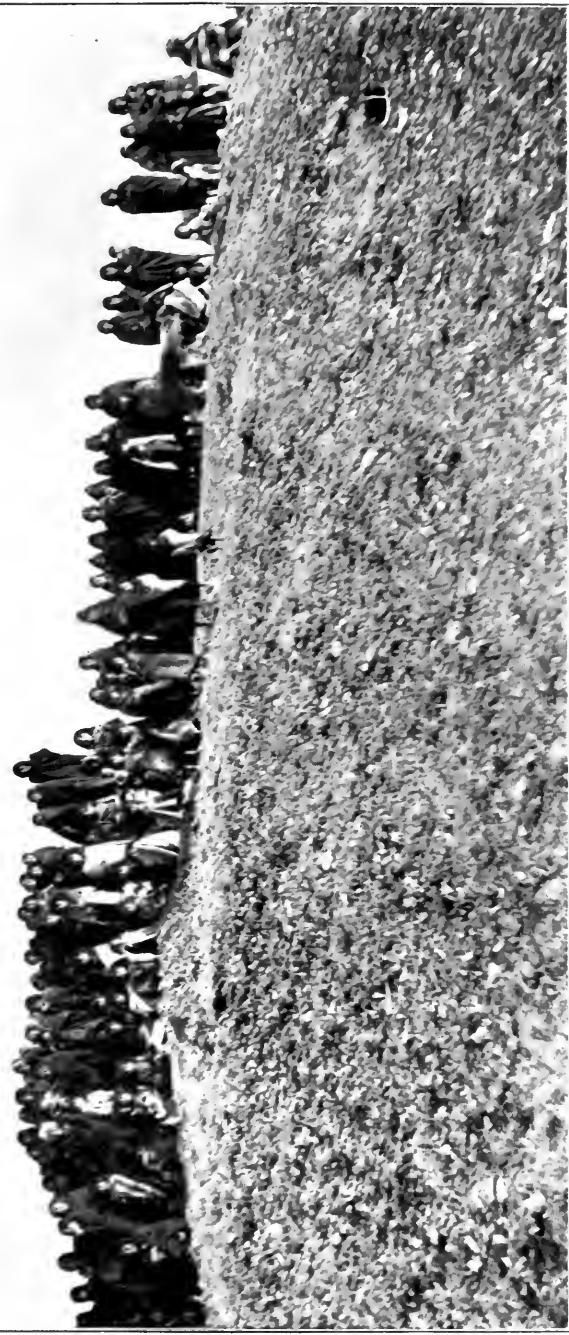


Photo by G. Wharton James.





**PL. CLXXIII.**

Wrangle between the corn-stalk bearers and the villagers.







**PL. CLXXIV. WRANGLING FOR THE CORN-STALKS.**

In the foreground one of the women is seen carrying her trophy homeward.



Photo by G. Wharton James, Copyright.





**PL. CLXXV. THE RACE WINNER AT THE KÍVA.**

The asperger is in the act of handing the prizes, which have been consecrated in the kíva, and the prayer-offerings to the race winner.



Photo by Sumner W. Matteson







**PL. CLXXVI.**

Warriors swinging the bull-roarer at the kiva.

the  $\mathcal{O}(\log^2 n)$  time complexity of the algorithm. This is a significant improvement over the  $\mathcal{O}(n^2)$  time complexity of the standard  $\text{KMP}$  algorithm.

pinches of sacred meal, pours the water from the móngwikuru, and then puts in, in an upright position, the long chochókpi with the wheel and cylinder, after which he fills up the hole, leaving the upper end of the chochókpi protruding slightly. The green báho he thrusts into the ground close by. These offerings are considered a special blessing to the field and augur a good crop not only at the approaching harvest, but also in coming years. The empty gourd vessel he returns to the kíva.

We next direct our attention to the two warriors whom we noticed among the first to arrive on top of the mesa. Arriving at the Antelope kíva they go around the kíva four times, twirling the bullroarers and then enter the kíva. (See Pl. 176.) In the kíva they go through the following performance, first the one and then the other: Standing east of the fireplace they shoot the lightning frame towards the hatchway four times, and then twirl the bullroarer an equal number of times, whereupon they seat themselves on previously arranged seats,<sup>1</sup> one east, the other west of the ladder, close to the kíva wall on the elevated portion of the kíva, guarding, as it were, the entrance. Upon their being seated, each one is handed a cigarette by Tobéngötiwa, which he smokes in silence, and then remains on that seat throughout the ceremony.

While these performances are going on the singing ceremony has been in progress. It has already been stated that everything was placed in readiness while the racers were on their way out, even to the taking out of the crooks and the handing of the típoni, snake, and bátñi to the Antelope youth and maid, and that upon the arrival at the kíva of the signal from the valley that the race had started, the first song is intoned and the progress of the ceremony is not interrupted even by the consecration of the race-winner's objects, the arrival of participants in the race, etc. Every racer, as soon as he enters the kíva, first sprinkles a pinch of meal to the altar, and then assumes his usual seat.

The Snake priests are on this morning arrayed in their usual costume and decoration, with perhaps a heavier coat of cûta on their faces. More netted gourd vessels are brought into the Antelope kíva this morning; on one occasion I noticed eight standing in a row on the east side of the altar, but more were brought in during the day. Their use will be explained in connection with the public performances in the afternoon.

<sup>1</sup> The seats consisted of a heavy stone used to fasten weaving looms to, of which a number may usually be found in every kíva, and some pelts and blankets spread on them. This is, as far as I can remember, the only instance where these stones were specially used for seats in a ceremony, blankets and pel's only being generally used.

As soon as the singing ceremony is concluded and the Snakes have filed out in the usual way, one of the warriors takes a position near the south-east corner of the altar and shoots the lightning frame four times towards the hatchway, which he follows by swinging the bullroarer four times. The other warrior repeats the same action, all the Antelopes in the mean while waiting in silence. Before the warriors leave the kíva they stop at the foot of the latter and say, one after the other, "Ita cúkaókahkang pío tápkwicni" (We, being strengthened, again go forth towards the evening). Outside they first shoot the lightning frames four times towards the sun, then they go around the kíva four times, shooting the lightning frame and twirling the bullroarer, once at each end and on each side of the kíva.<sup>1</sup> They then proceed to the Snake kíva twirling the bullroarer on the way. At the Snake kíva they repeat the same performance that took place at the Antelope kíva, only here first outside and then inside of the kíva. When they have finished, they lay their instruments on a tray, near the altar, which is then placed near the fireplace. All present assemble around it and smoke over it, following the smoke by a prayer from each one, even the smaller boys (which is something unusual) and another smoke, for which all pipes that can be found are used. This smoke is followed by the usual morning meal in which all participate.

After breakfast the men engage in different pursuits; some repair their snake costumes, moccasins, etc., others make prayer offerings, smoke, sleep, etc. As a knowledge of the manufacturing of báhos on this occasion, their kind and how they were disposed of may be of importance in further studies of this ceremony, and as the observations thus far made on this subject are somewhat incomplete, those that have been made will be given in detail. In 1896 the following prayer offerings were made, as far as recorded: Macángöntiwa made one peculiar double báho, which he painted light blue and which, on account of its color, was very unusual. It was about six inches long and otherwise made the same as any other common báhos, only it had a long string (púhu) attached to it. Besides this, he made three or four double báhos, one stick being black, one green. These báhos with sticks of two different colors are called naálöng-báhos and are made, as far as I know, by the Snake and Antelope Fraternities only. He also prepared four pútsvahos which have already been described.

Nüvák wahū made three naálöng-báhos, the same kind as Macán-göntiwa had made.

Pühúnömtiwa made seven warrior báhos, which, it will be remem-

<sup>1</sup> These acts symbolize lightning and thunder.

bered, consist of a single, undecorticated stick, painted red with pulverized specular iron sprinkled over it, and having a bald eagle wing feather tied to its upper end and a breath feather suspended from it, and a corn-husk packet fastened to the stick with the feathers. The stick is slightly pointed at one end. The wing feather is from five to seven inches long. They were also sprinkled with the specular iron (*yaláhai-i*). When he had finished the *báhos* he spurted some honey and smoked on them and then placed them on a tray. Later he thrust them behind the bead strands of *Póokong*, and I understood that some of them were offered to the different shrines along the race trail by the two warriors the next morning.

Besides these *báhos* a number of *nakwákrosis* were made by or for all participants, those for the younger members being made by the older men. As nearly as I could ascertain, six *nakwákrosis* were supposed to be made by each man.

In 1900 the following prayer offerings were made as far as recorded:

*Páhúnömtiwa*, who it will be remembered, was acting as chief priest, made the following: One double, light blue *báho* about six inches long with a long "road" attached to it; five *naálöng-báhos* about five inches long, of the usual kind; and three *chochókpis* about four and a half inches long.

*Qótcvoyaoma* made seven *naálöng-báhos* about six inches long and four *chochókpis* somewhat shorter.

*SiKáhongniwa* made one *naálöng-báho* and one *chochókpi*, both of the usual length.

All made a number of *nakwákrosis*; the exact number made by each man, however, was not ascertained, as some seemed to make some for themselves and some for others, for instance, the younger members; but as nearly as I could learn most of them made six *nakwákrosis*.<sup>1</sup>

A number (seven) warrior *báhos* were also made by *Taláschahtiwa* and *Sihohya*.

Some time in the forenoon several of the younger members are sent after cottonwood branches for the snake booth. In 1896 *SiKáveima*, *Taláschahtiwa*, *Sihohya*, and *Hóveima* were sent; in 1900 *Sihohya*, *Hóveima*, and *Macáhongniwa*. They put on the common ceremonial kilt, moccasins, take with them the snake bag, a few *nakwákrosis*, corn-meal, and hatchets (to cut off) and straps (to carry) the branches.

<sup>1</sup> Considerable lack of regularity seems to exist with regard to the number of prayer offerings made in Hopi ceremonies. While it is true that certain *báhos* and *nakwákrosis*, especially those made by the leading priests and on special occasions, are made and disposed of in the same manner in every reoccurring ceremony, a good deal of scope is left to the personal inclination and wishes of the maker on other occasions. While preparing his prayer offerings the maker happens to think about a special deity or "patron saint, or a leather that he happens to have left sets him to thinking about one, and he makes an extra offering. This is true of *báhos*, but more so of *nakwákrosis*.

(See A, Pl. 177.) They return at about noon. Occasionally they bring a snake with them.<sup>1</sup>

Other preparations for future events are being made in the Snake kíva. The two warriors repaint their lightning frames, one-half with cútá, a red mineral paint; the other half with sákwa, a green mineral paint; both said to be usually obtained from the Kohonínos. They also renew the small feathers on the edge of the lightning frames. The chief priest hunts up an old plank to be placed in front of the kísi (booth) on the plaza, as will be more fully described presently.

Soon after the noon meal several of the younger Snake members are sent to the plaza to erect the snake booth. Usually the ones who got the branches do this work. They first make four holes in a square, using hatchets, sticks, and shípviñas. (See A, Pl. 178.) Into these holes they put the larger branches—about four inches thick—and between them they thrust the smaller branches into the ground, filling up the spaces between these with a tall grass. The east side is closed up with an old white bridal blanket (ówa). The booth, when finished, measures from three to four feet in diameter, the size varying somewhat in the different years, and is usually neither quite square nor quite round. (See B, Pl. 178.) At about this time a bunch of green melon, bean, cotton, and other vines and a young corn-stalk is brought into the Snake kíva and placed first behind the altar, later in front of the fireplace, to be used in the public performance of this day.

When the booth is completed the chief Snake priest requests the men to assemble around the fireplace for a smoke; first, however, he makes a nakwákwoxi, which, I think, he places on the floor near the fireplace. All smoke, several pipes being used. After the smoke, the chief priest takes a báho, some sacred meal, and I think the aforementioned nakwákwoxi, and proceeds to the plaza. Here he cleans out an opening in the ground (in front of the booth), which is about eight or ten inches square. Into this opening he places the prayer offerings (see A, Pl. 179) and corn-meal, saying the following prayer: "Taá it yet nu umúngám yúku. Ówi úma it akw móngwacyani! Mongwacyakahkang pas pai itámui ókwatotwani. Pas pai úma ókwatotwani, píu ókiw yókwani." (Now this here I have made for you. Therefore, you must depend on—subsist on—this. Depending on this, you must pity us. You must pity us now and bring us rain.) Hereupon he covers it up with an old plank about ten inches wide,

<sup>1</sup> In 1896 Macángöntiwa took a bowl at about this time, rinsed it out, put several pieces of root into it, which he selected from his bags, and took the bowl out. Unfortunately I could not follow him at that time, but am inclined to believe that he prepared some medicine for some one supposed to have been affected by the snake charm. Such patients, if members of the Snake Fraternity, are sometimes brought into the Snake kíva and thus treated. (See B, Pl. 177.)



PL. CLXXVII.

A. One of the Snake priests leaving the kíva to get cottonwood branches for the snake booth. In his left hand he carries a snake bag and snake whip, in the blanket a hatchet to chop off the branches and a rope to tie them up and carry them with.

B. A Snake priest taking into the kíva a child who is supposed to be under the influence of the snake charm—in this case a swelling of and pain in the abdomen—and who is to be discharmed in the kíva, which is effected by rubbing and sucking the child on the part of the priests.

A



B





1970-1971 - 1971-1972 - 1972-1973 - 1973-1974

19. *Leucosia* *leucostoma* *leucostoma* *leucostoma*

1990-1991  
1991-1992  
1992-1993  
1993-1994  
1994-1995  
1995-1996  
1996-1997  
1997-1998  
1998-1999  
1999-2000

1981-1982  
Yearly Summary

**PL. CLXXVIII. BUILDING THE SNAKE BOOTH.**

A. Digging the holes for the larger sticks. The implements that are used for digging are the ship-wikas that are used on the snake hunts.

B. The booth finished. Attention is drawn to the kilt of the first boy. It is the so-called söqöm-vítkuna (black kilt), which is the first ceremonial kilt worn by small boys.

A



B





the first time, the results of the present study are compared with those obtained by other authors.

The paper is organized as follows. In Sect. 2 we describe the model and the numerical method used. In Sect. 3 we present the results of the simulation and compare them with the results of previous studies.

In Sect. 4 we discuss the physical processes involved in the formation of the filamentary structures observed in the simulation. Finally, in Sect. 5 we draw our conclusions.

This paper is the second in a series of papers devoted to the study of the evolution of the filamentary structures in the intergalactic medium.

We would like to thank the anonymous referee for his/her useful comments and suggestions which have greatly improved the quality of this paper.

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Correspondence to: A. M. Martínez-Delgado (e-mail: amm@posta.es)

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**PL. CLXXIX. THE DANCE PLAZA AND A SHRINE.**

A. The chief Snake priest cleaning out the opening on the plaza over which he places the plank on which the dancers stamp with their right foot. Before putting the plank on he deposits a báho into the opening.

B. One of the kacina shrines in which prayer-offerings and other objects of various kinds are deposited.

A



B





and about three feet long. He then returns to the kíva, where he again smokes. In 1896 he then made some nakwákrosis, which he handed to one of the young men, who took them out—for what purpose I did not learn—but returned in a few minutes. He had put on his snake kilt for this errand. Soon after the Snake chief proceeds to the Antelope kíva for the mutual smoke with the Antelope priest. The other Snake priests prepare for the approaching public ceremony, putting on their common kilts, their moccasins, renewing their usual body decorations, combing their hair, etc. As soon as the two chiefs are done smoking another messenger is sent after water for the race on the following morning, this time, however, a member of the Snake Fraternity. He takes with him the same objects as the messenger on the previous day, but instead of the double green báhos from the Antelope chief he takes with him some naálöng-báhos from the Snake chief, and instead of going to either Túhciva or Torfiva he goes along another trail to either Topóshkawa or Matóva, generally, however, to the first named. He deposits his prayer offerings in the same manner and at as many places as the Antelope man did. The trail which he takes is somewhat west of the other one and is the same on which the race takes place the next morning.

Having thus recorded the proceedings of the Snake kíva, and seen the Snake messenger depart to the distant spring for water, we again turn to the Antelope kíva to record the events of the day from the time when we left the kíva with the two warriors in the morning, leaving the Antelopes silently awaiting the departure of the latter. As soon as the warriors have left the kíva, the Antelopes also leave their places, the Antelope youth and maid disrobe, and wash off their paint as usual. After some smoking is indulged in and some have begun to make preparations for making prayer offerings, the usual morning meal is brought into the kíva, and all eat again, however avoiding salted food and meats. After breakfast a great number of prayer offerings are made. As already indicated, it is extremely difficult to ascertain just what and how many báhos and nakwákrosis are supposed to be made during a ceremony by each participant. In some cases rules are observed, especially by the leading priests. As a general thing a great deal of irregularity exists and a certain amount of freedom seems to be left to the inclination of the individual priest—with certain limits, of course. As I have been obliged to make these observations alone and two kívas had to be watched, and in each kíva different priests, it has been impossible to settle this point. In order to aid further studies of this matter, the facts pertaining to it, as recorded in the different years, are given separately.

In 1896, the chief priest, Tobéngötiwa, made eight green báhos with black tips, and one set of four and one of five chochókpis, besides a number of nakwákrosis. Eight of the latter were turkey feathers with red strings and two roads with yellow strings (rolled in honey and corn-pollen). The twine, wound around the upper end of the chochókpis had been colored in rings alternately red and black, the usual colors being black and white. He then placed four green báhos and five chochókpis and one road on one pile, the other four báhos, four chochókpis, and one road on another pile.

Yukíoma, who it will be remembered, was initiated on this occasion, made one green báho, one chochókpi, and twelve nakwákrosis; the strings of the latter, as well as those of the feathers attached to the báhos, were stained red and the twine on the chochókpis he colored in the same manner as Tobéngötiwa had colored his.

Sihongniwa, the pipelighter, made eight báhos of the usual kind, Mokahátiwa six, and Tobévohyoma also six, all three also staining the strings of the feathers attached to the báho sticks red. All the other men made only nakwákrosis, but just how many my notes fail to state, also how these prayer offerings were disposed of, but I am told they are deposited the next day in the field, peach orchards, etc.

In 1898 no special record could be made of this báho-making, as the filling up of other gaps in my notes occupied my time.

In 1900 I noted down the following: Tobéngötiwa made three sets of four green báhos (with black tips) each, all about five inches long; one set of five and one of four chochókpis, about six inches long. All the strings on the nakwákrosis, which were attached to the báhos, were painted red, and the twine on the chochókpis colored as described above. The number of nakwákrosis made was not recorded. He was assisted in the work by his son Hónwahtiwa.

Cákvyamtiwa made one green báho, one chochókpi, and a number of nakwákrosis. Sihongwa and Hónwahtiwa made the same. Sikáheptiwa, the sprinkler, made two green báhos, two chochókpis, one long chochókpi about fourteen inches long, one cylinder two and three-quarters inches long by one-half an inch thick, and a yoiyngöla (rain wheel) about four inches in diameter. Into two sides of the latter were inserted four duck feathers and from one side was suspended an eagle nakwákrosi.

The nakwákrosis on all the báhos, as far as I could ascertain, were duck feathers.

If any more báhos were made, it escaped my notice.<sup>1</sup> A number

<sup>1</sup> I am told that every participant makes at least one báho and one chochókpi. The long chochókpi, with the wheel made by the sprinkler, Sikáheptiwa, was taken to the spring in the evening and secured by the race winner the next morning.

of nákwákrosis were made by each priest, usually either six or eight, although that number was by no means strictly adhered to.

While these prayer offerings are made, other work is attended to. Dance costumes are put in order, moccasins repaired, etc. Now and then singing is practiced, and smoking is not overlooked. On one occasion, I noticed that one of the priests made a feather head-dress (*nákwa*) for a novice, the head-dress consisting of sixteen small eagle feathers, two and two of which were tied together at their quill ends and to the tips of which were fastened bluebird wing and tail feathers, also two and two being tied together. The eagle feathers were stained red and were fastened to a piece of buckskin. Every Antelope and Snake wears such a *nákwa* on his head in the public performance.

At about noon on this day all the Antelopes take off the small feather which they have thus far worn in their hair (and which is also called *nákwa*) and string them on a stick, which is laid on the floor near the fireplace. The owners, so I was told, deposit those *nákwas* at different places—fields, melon patches, etc., outside of the village.<sup>1</sup> Some one brings in a few cottonwood branches for the public performance.

At about half-past four o'clock the men begin to get ready for the performance on the plaza. Their body decoration is as follows: The feet, hands, and chin are painted black; and in the case of the sprinkler, a white line runs from ear to ear over the upper lip.

Their costume consists of the embroidered kilt and sash, a fox-skin, which is suspended from the sash behind, a bandoleer of dark blue yarn over the right shoulder, a strand of the same yarn around the legs below the knee, decorated ankle bands, and several strands of beads around the neck from which is suspended in front an abalone shell. On the head they wear in front a single white eagle feather and on the apex of the head the large *nákwa*, already described.<sup>2</sup>

In their hands they hold the following objects: The chief priest, who takes the lead, holds in his left hand the *típoni* that had been used in the different morning and evening ceremonies a gourd vessel and a bag with corn-meal; in his right hand he holds a rattle.<sup>3</sup> He is followed by the sprinkler, who carries the medicine bowl and the

<sup>1</sup> In the Powamu ceremony these *nákwas* are deposited in one of the Katcina shrines close to the village. (See B, Pl. 179.) The Snake *nákwas* are said to be deposited at almost any place near the village; the same is true of the *nákwas* used in the Flute ceremony.

<sup>2</sup> The sprinkler wears around his head a wreath made of small cottonwood.

<sup>3</sup> This rattle is supposed to be made of a wooden ring, over which is stretched an antelope scrotum skin. This is gathered on the lower side around a short stick, about three inches long, to which it is wound by means of a thong. The rattle, I believe, contains shelled corn.

aspergill. All the rest have in their right hand a rattle, in their left a bag with sacred meal and a netted gourd vessel, and one of the straight sticks from the altar. (See Pl. 180.)

We now again turn our attention to the Snake kíva, where we left the men as they were beginning to get ready for the public performance on the plaza. Their body decoration was as follows: The face, arms, chest, back, a band above the knee and lower legs were daubed with soot. Spots were then made with a mixture of a red ochre (*cúta*) and common clay (this mixture being called "palátcka" red clay), on the following places of the body: The forehead, chest, back, outside of upper and lower arm (near the elbow), outside of upper and lower leg (near the knee), both hands and the top of the head. Concerning these spots, which have been repeatedly mentioned through the paper, I am told that in former days, when the Hopis were still occasionally at war with other tribes, the warriors who were to leave the village to meet the enemy, would assemble by clan groups north of the village. Here one of the older members of the Kókop (Burrowing Owl) clan prepared a clay or paste of pulverized Pöökóng-nayöö<sup>1</sup> (Pöökóng-vomisis) and water. The water was taken from a medicine bowl which also contained fetishes of stone, shell, and bone. As the men, clan after clan, filed by him, he would put just such marks on their bodies as the Snakes put on to this day, in memory of those occasions. These marks are called "hurútcakaci" (strong or hard body painting), because they were said to make the flesh of the warrior tough and proof against the arrows of the enemy.<sup>2</sup> Having finished their body decoration, the Snakes put on their common kilts and their moccasins, pick up their snake whips and bags with sacred meal and wait for a signal from the Antelope kíva that all is ready for the mutual performance. The Antelopes come out from the kíva first. Lining up north of the kíva, they stop for a few minutes, shaking their rattles, and then proceed to the plaza, which is only seventy-five feet away. Here they go around in a circle from right to left in front of the booth four times (see Pl. 181), passing over the before-mentioned opening, sprinkling a pinch of sacred meal on the plank, and vigorously stamping their right foot on it as they do so. Hereupon they line up in

<sup>1</sup> Pöökong is the God of War and of protection in general. This stone is called Pöökóngnagöö, because, the Hopi say, Pöökong "vomits it up," and it often resembles in the natural state and in larger quantities a petrified semi-liquid mass. A sample of this stone, which is also used by Hopi doctors as a medicine, may be seen in the Hopi collections of the Field Columbian Museum.

<sup>2</sup> At the conclusion of the war ceremony in the Soyál celebration in Oráibi, one of the leaders makes a mark on the chest and back of every participant, using a clay that has been prepared with the water from the warrior's medicine bowl, and finally the men take a pinch of that clay, fill their mouths with water, and proceed to their homes, where they make similar marks on the bodies of the members of their families. (See The Oráibi-Soyál Ceremony, by G. A. Dorsey and H. R. Voth, p. 25.)



**PL. CLXXX.**

The Antelope priests emerging from their kíva to go to the plaza on the eighth day for the public performance.



Photo by G. Wharton James.





**PL. CLXXXI.**

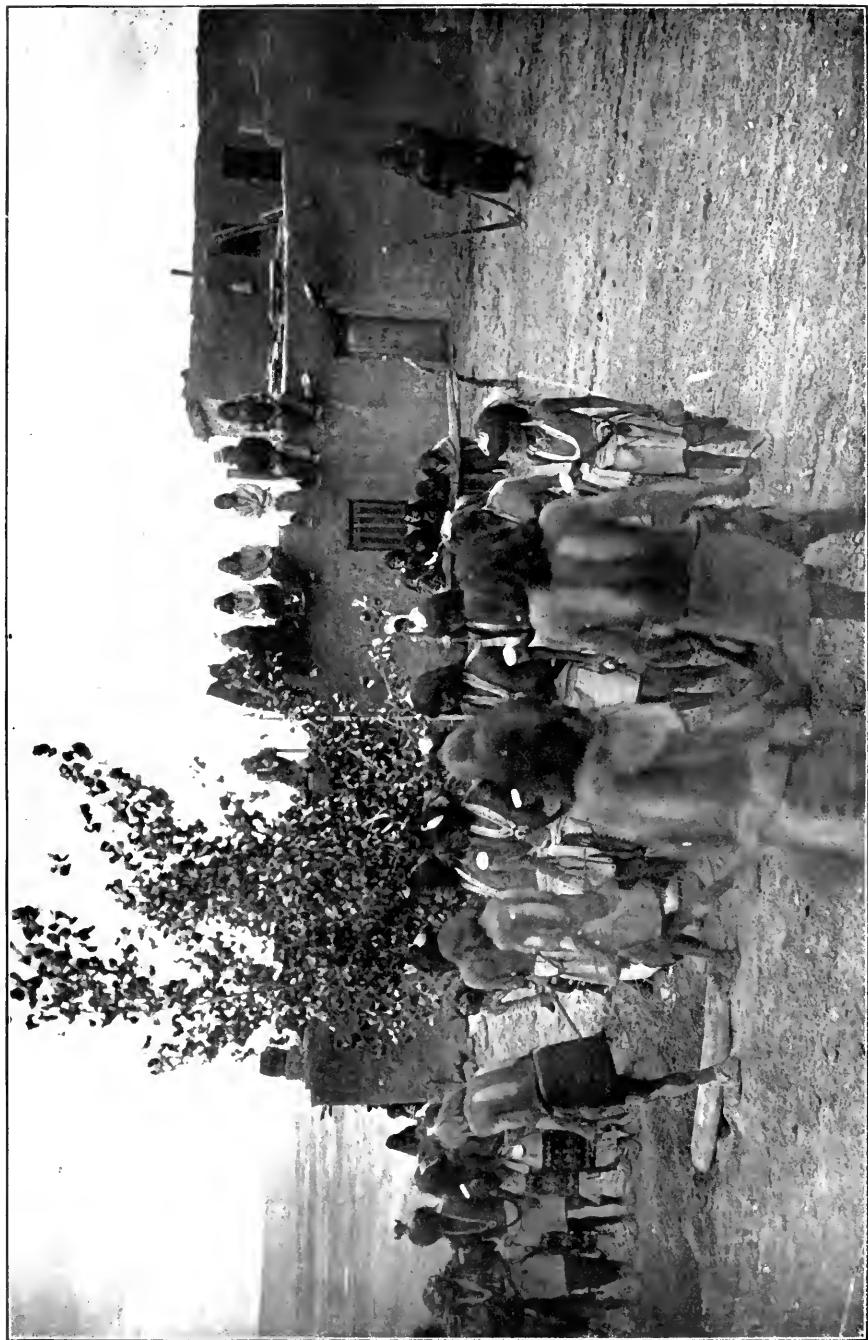
The Antelope priests going around in a circle in front of the booth on the eighth day.



Photo by G. Wharton James.





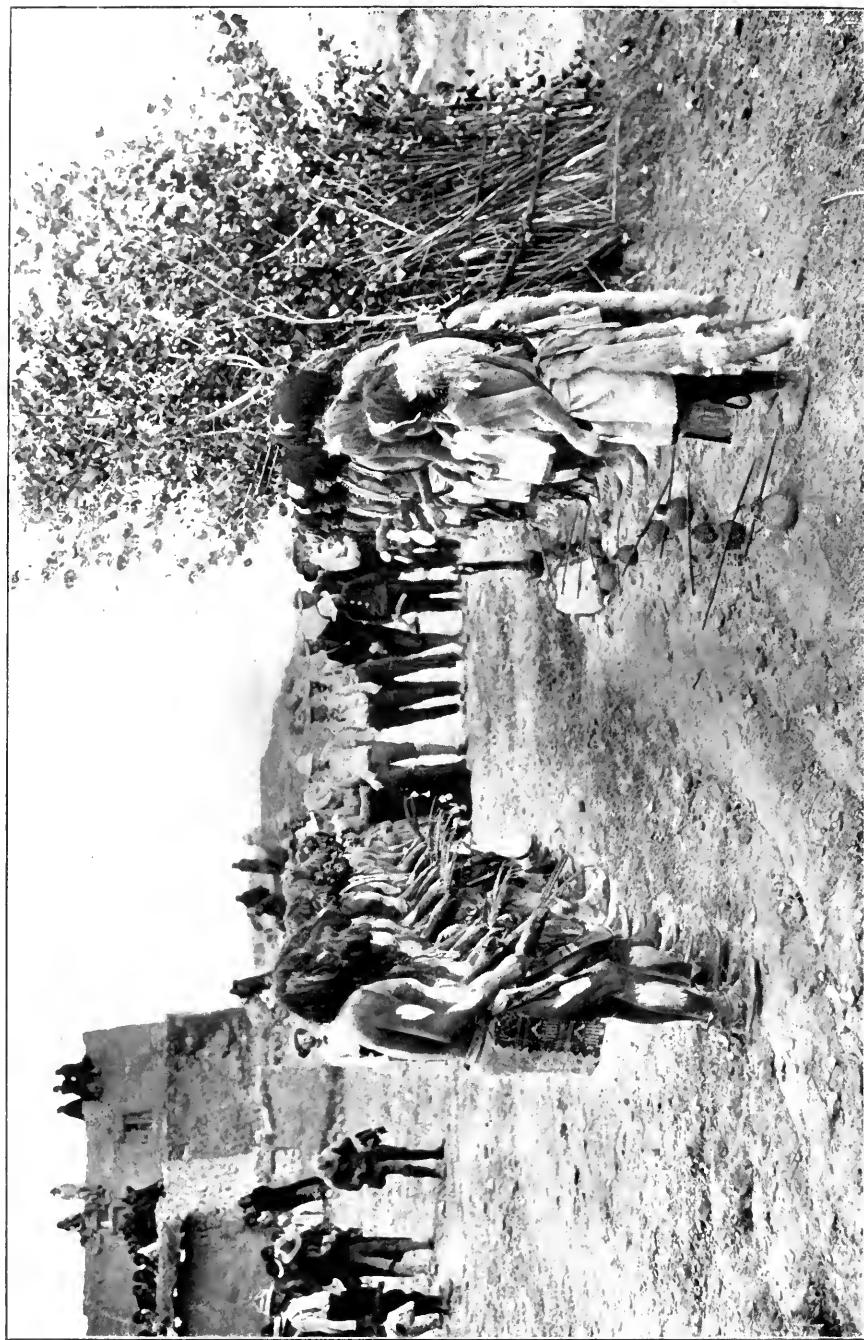


**PL. CLXXXIII.**

The Snakes going around in a circle in front of the booth and stamping on the plank with their right foot (eighth day).







PL. CLXXXIV.

The Plate shows both Fraternities in position in front of the booth on the eighth day. They are in the act of singing, the Antelopes waving their rattles, the Snakes their whips, to the time of the singing. In front of the Antelopes may be seen the tiponi, medicine bowl, móngwikurus, and the sticks taken from the altar.

### MAXIMUM

maximum value of the function  $f(x)$  over the domain  $D$  is called the maximum value of the function  $f(x)$ .  
The maximum value of a function is also called its global maximum or absolute maximum.  
A local maximum is a point at which the function has a local maximum.





Photo by G. Wharton James.

**PL. CLXXXV.**

The Snake dancers in the act of making certain sideway motions with their hands, to which they hum a song in a low tone (eighth day).

XXXXXX

the  $\mu$ -function and domain of definition of  $\mu$  is  $\mathbb{R} \setminus \{0\}$ , and the  $\nu$ -function and domain of definition of  $\nu$  is  $\mathbb{R} \setminus \{0\}$ .





Photo by G. Wharton James.

**PL. CLXXXVI.**

The Plate shows the stage of the dance when the Snake priests step forward and backward and the vine dancer is beginning his circuit, the Chief Snake priest just about to lay his hand on his back and to accompany him.

where  $\hat{Q}_t^*(s, a)$  is the estimated value function at time  $t$  and  $\hat{\pi}_t(a|s)$  is the estimated policy at time  $t$ .

Theorem 1. Let  $\{s_t\}_{t=0}^\infty$  be a sequence of states generated by the stochastic process  $(S, A)$  and let  $\{a_t\}_{t=0}^\infty$  be a sequence of actions generated by the policy  $\pi_t(a|s_t)$ . Then, if the conditions (C1)–(C4) hold, the sequence  $\{\hat{Q}_t(s_t, a_t)\}_{t=0}^\infty$  converges almost surely to the true value function  $Q^*$ .

Proof. We first prove that  $\hat{Q}_t(s_t, a_t)$  converges to  $Q^*(s_t, a_t)$  almost surely. By the definition of  $\hat{Q}_t(s_t, a_t)$ , we have

$$\hat{Q}_t(s_t, a_t) = \frac{1}{N_t} \sum_{i=1}^{N_t} \left[ r_i + \gamma \mathbb{E}_{s_{i+1}, a_{i+1}}[\hat{Q}_t(s_{i+1}, a_{i+1})] \right],$$

where  $N_t$  is the number of times that state  $s_t$  and action  $a_t$  are sampled. Let  $\hat{Q}_t^*(s_t, a_t)$  be the estimate of  $Q^*(s_t, a_t)$  at time  $t$ . Then, we have

$$\hat{Q}_t^*(s_t, a_t) = \frac{1}{N_t} \sum_{i=1}^{N_t} \left[ r_i + \gamma \mathbb{E}_{s_{i+1}, a_{i+1}}[Q^*(s_{i+1}, a_{i+1})] \right].$$

Let  $\epsilon_t = \hat{Q}_t^*(s_t, a_t) - \hat{Q}_t(s_t, a_t)$ . Then, we have

$$\epsilon_t = \frac{1}{N_t} \sum_{i=1}^{N_t} \left[ \mathbb{E}_{s_{i+1}, a_{i+1}}[Q^*(s_{i+1}, a_{i+1})] - \mathbb{E}_{s_{i+1}, a_{i+1}}[\hat{Q}_t(s_{i+1}, a_{i+1})] \right].$$

By the definition of  $\hat{Q}_t(s_t, a_t)$ , we have

$$\hat{Q}_t(s_t, a_t) = \frac{1}{N_t} \sum_{i=1}^{N_t} \left[ r_i + \gamma \mathbb{E}_{s_{i+1}, a_{i+1}}[\hat{Q}_t(s_{i+1}, a_{i+1})] \right].$$

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Let  $\epsilon_t = \hat{Q}_t^*(s_t, a_t) - \hat{Q}_t(s_t, a_t)$ . Then, we have

$$\epsilon_t = \frac{1}{N_t} \sum_{i=1}^{N_t} \left[ \mathbb{E}_{s_{i+1}, a_{i+1}}[Q^*(s_{i+1}, a_{i+1})] - \mathbb{E}_{s_{i+1}, a_{i+1}}[\hat{Q}_t(s_{i+1}, a_{i+1})] \right].$$

By the definition of  $\hat{Q}_t(s_t, a_t)$ , we have

$$\hat{Q}_t(s_t, a_t) = \frac{1}{N_t} \sum_{i=1}^{N_t} \left[ r_i + \gamma \mathbb{E}_{s_{i+1}, a_{i+1}}[\hat{Q}_t(s_{i+1}, a_{i+1})] \right].$$

Let  $\hat{Q}_t^*(s_t, a_t)$  be the estimate of  $Q^*(s_t, a_t)$  at time  $t$ . Then, we have

$$\hat{Q}_t^*(s_t, a_t) = \frac{1}{N_t} \sum_{i=1}^{N_t} \left[ r_i + \gamma \mathbb{E}_{s_{i+1}, a_{i+1}}[Q^*(s_{i+1}, a_{i+1})] \right].$$

Let  $\epsilon_t = \hat{Q}_t^*(s_t, a_t) - \hat{Q}_t(s_t, a_t)$ . Then, we have

$$\epsilon_t = \frac{1}{N_t} \sum_{i=1}^{N_t} \left[ \mathbb{E}_{s_{i+1}, a_{i+1}}[Q^*(s_{i+1}, a_{i+1})] - \mathbb{E}_{s_{i+1}, a_{i+1}}[\hat{Q}_t(s_{i+1}, a_{i+1})] \right].$$

By the definition of  $\hat{Q}_t(s_t, a_t)$ , we have

$$\hat{Q}_t(s_t, a_t) = \frac{1}{N_t} \sum_{i=1}^{N_t} \left[ r_i + \gamma \mathbb{E}_{s_{i+1}, a_{i+1}}[\hat{Q}_t(s_{i+1}, a_{i+1})] \right].$$

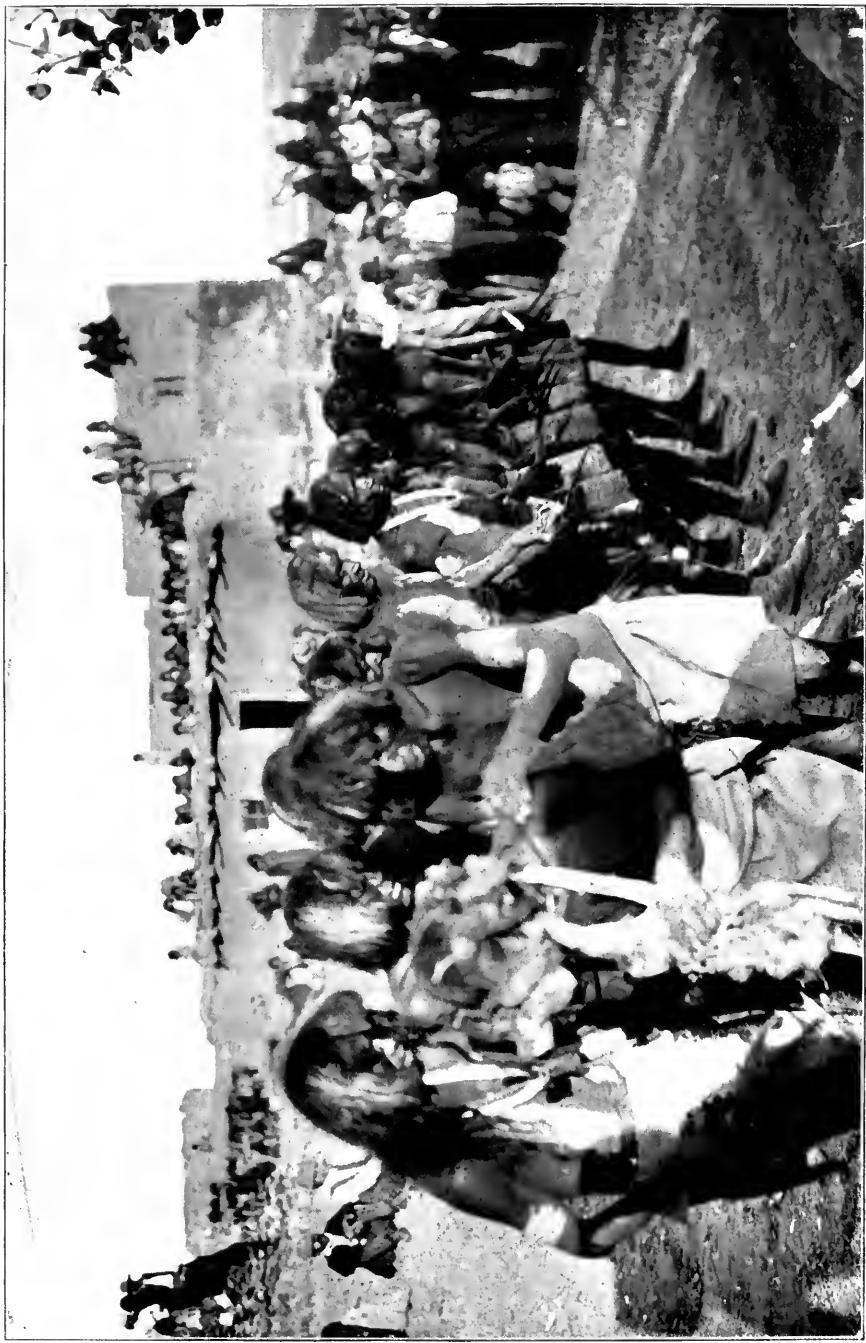
Let  $\hat{Q}_t^*(s_t, a_t)$  be the estimate of  $Q^*(s_t, a_t)$  at time  $t$ . Then, we have

$$\hat{Q}_t^*(s_t, a_t) = \frac{1}{N_t} \sum_{i=1}^{N_t} \left[ r_i + \gamma \mathbb{E}_{s_{i+1}, a_{i+1}}[Q^*(s_{i+1}, a_{i+1})] \right].$$

Let  $\epsilon_t = \hat{Q}_t^*(s_t, a_t) - \hat{Q}_t(s_t, a_t)$ . Then, we have

$$\epsilon_t = \frac{1}{N_t} \sum_{i=1}^{N_t} \left[ \mathbb{E}_{s_{i+1}, a_{i+1}}[Q^*(s_{i+1}, a_{i+1})] - \mathbb{E}_{s_{i+1}, a_{i+1}}[\hat{Q}_t(s_{i+1}, a_{i+1})] \right].$$





**PL. CLXXXVII.**

The performance of the vine dancer and the Snake priest (eighth day).

БЛ. ОДНОКЛАССИ

Члены Правительства и представители общественности в зале заседаний Государственной Думы



A



B



**PL. CLXXXVIII.**

- A. Humming with lateral motion by the Snake priests (eighth day).
- B. Performance of the vine dancer (eighth day).



front of the booth, still shaking their rattles, holding them upward, and await the arrival of the Snakes. (See A, Pl. 182.) The latter now emerge from their kiva, proceed to the plaza, walk around four times in the same manner as did the Antelopes (see Pl. 183), and then draw up in line about six feet from the Antelopes, the two platoons facing each other. (See B, Pl. 182.) The Antelope chief then sprinkles a line of corn-meal about eighteen inches in front of the Snakes between the two platoons of men, and another line about eighteen inches in front of the Antelopes, and then steps back to his place at the extreme south end of the line of his men. The Antelope rattles are still in motion, the sound thus produced resembling very much the sound produced by the tails of rattlesnakes. Presently the Chief Antelope priest puts on the meal line in front of the Antelopes, the *típoni*, the sprinkler, the medicine bowl, and the other water vessels and sticks. (See Pl. 184.) While this is done, the Snakes lock their hands and in a slightly stooping position (see Pl. 185), hum a song, waving their hands in which they hold the whips sideways to the time of their singing. The Antelopes also wave their rattles from side to side. In a few minutes the Snakes assume an erect position and sing the same song, but much louder, accompanying the singing with vigorous stamping of the right foot, and shaking of the whips. (See Pl. 202.) The Antelopes also sing and rattle louder. These two kinds of performances alternate about eight times, the number of times having been found to vary in the different ceremonies. Hereupon all make a short pause and then begin to step forward and backward, the Antelopes stepping backward when the Snakes step forward and vice versa. As soon as this kind of backward and forward dancing begins the sprinkler steps forward (the man next to him taking the medicine bowl), and then moves slowly around four times in an elongated circuit between the two platoons, the sprinkler moving his arms to the time of the singing (see Pl. 186), the Snake priest follows him, holding his left hand on the sprinkler's left shoulder and stroking with his right hand, in which he holds his snake whip, the back of the latter. After the fourth time, they stoop down before the booth, from which the sprinkler takes the bunch of vines which we saw during the day in the Snake kiva. This bunch of vines he takes between his teeth near the root end, and grasping it with his hands, he again steps forward, describing the same circuit as before, and being followed by the Snake priest in the same manner as before (see Pl. 187 and B, 188), waving the bunch to the time of the singing in the same manner as the snakes are held and moved at the public performance the next day. When the circuit has been described four times, the

sprinkler drops the vines on the ground, proceeds in the same manner for about half a minute, and then both resume their positions in the lines of their men. One of the Snake men picks up the bunch of vines in the manner in which at the Snake dance proper the snakes are picked up. Hereupon the Snake priests again make the circuit four times in the same manner as when they arrived, the Antelopes shaking their rattles while they do so, and then proceed to their kíva. As soon as they have disappeared, the Antelopes leave the plaza in the same manner as the Snakes; i.e., first going through the same performance.

In the Snake kíva all arrange themselves around the fireplace, north of which is lying the bunch of vines. All smoke, using every available pipe, and then each one utters a fervent prayer. The bunch, I am told, is then taken to the field by any one in the kíva.

After all had laid off their ceremonial costume, supper was partaken of in both kívas, after which, outside of the usual smoking, nothing of importance was observed on this day. The fast is broken in the Antelope kíva this evening, the men being allowed to eat anything at this evening's meal and also the next day.

## NINTH CEREMONIAL DAY.

(TÍKIVEE; DANCE.)

Practically the same performances are repeated in both kívas, beginning at the same early hour as on the previous day. Only the race of this morning is called the Snake race, while that of the previous morning was called the Antelope race. The race on this occasion starts at a place a short distance south-east from the one from which the Antelope race started. The same Snake man who got the water from the spring on the previous evening is supposed to take it out to the starting-place this morning. Again neither the Antelope nor the Snake men participate in the race from the starting-place, but join the racers along the route. Nor are they contestants for the prize. Báhos, nakwákrosis, and meal are again deposited at the different shrines along the route<sup>1</sup> and at the starting-place, and the lightning frames are shot and the bullroarers twirled at intervals along the route of the race. (See Pls. 189 and 190.)

In the Antelope kíva the members of both Fraternities who do not participate in one capacity or another in the race, have in the

<sup>1</sup> Prayer offerings are deposited at three different places along the route of the snake race, and also at the starting-place. Of the three places only one has a regular name, Kaóktkipu (Place-of-Burnt or Charred Corn), because, in a war, Návajos burned up a pile of husked corn at that place.



**PL. CLXXXIX.**

Spectators at the edge of the mesa watching the Racers in the valley.



Photo by G. Wharton James.



$$\tau = \left(1 + \frac{1}{2} \gamma^2 \alpha_0^2 \sigma^2 \right)^{-1/2} \left(1 + \frac{1}{2} \gamma^2 \alpha_0^2 \sigma^2 \right)^{-1/2}$$

**PL. CXC.**

Waiting for the Racers at the edge of the mesa (ninth day).









Photo by Oscar Depew.

**PL. CXCI.**

Snake priests arriving at the Snake kíva from the Antelope kíva.





mean while assembled for the last time.<sup>1</sup> The first smoke has been had, the crooks taken out, the snake and tifponi handed to the Antelope youth, the pot with the contents to the Antelope maid and all await in silence the signal announcing the starting of the race. In 1896 I noticed that one of the men who came in from the race handed to the sprinkler a young green corn-ear and one a young corn-stalk, both of which he placed south of the sand mosaic. The Snake men appear in partial Snake costume and Snake decoration.<sup>2</sup> (See Pl. 191.) The latter varies from the usual body decoration, in the fact that the face is painted deep black with a sprinkling of glittering specular iron over it, the body probably daubed a shade blacker than usual and the legs below the knee and arms below the elbow daubed pink entirely instead of a large spot on the outside of the leg. (Compare Pls. 202 and 206.) The costume worn by the warriors consists of the large tcú-nakwa, already described; the tcú-vitkuna (snake kilt)<sup>3</sup> with the symbol of a snake on it; the wokókwāva (big belt), consisting practically of a piece of buckskin cut into long fringes;<sup>4</sup> arm bands, made of green cedar bark or sometimes of green cedar wood; leg bands, made of deer leg skin with the hair on, worn below the knee; moccasins, with fringed ankle bands; a foxskin and several strands of beads. (See Pl. 176.) The race this morning starts at a place known as the "Snake-Race-Place," about half a mile south-west from the place where the Antelope race started the previous morning. The same offerings are made by the warriors as on that occasion, and the race—the sprinkling of meal as the racers reach the top of the mesa, the performances of the warriors around and in the kfvas, the disposition of the race winner's prizes, the singing ceremony, etc.—is, as far as my observation goes, an exact repetition of the corresponding performances of the previous day. It was noticed in 1896 that the Snake novice left his corn-ear in the Antelope kfva with the newly brought in corn-stalk south of the altar.

In the Antelope kfva again no fasting is observed on this day. On one occasion I noticed that Sihongwa carried out a small amount of food in a bowl to a place near the Katcina shrine west of Oráibi.

But proceed we now to the Snake kfva and first record again the

<sup>1</sup> Much smoking is being done in the Snake kfva early in the morning. On one occasion I noticed that the sputa from the smokers had actually run along the floor for about four feet. In 1896 the snakes were also transferred from the jars to a large sack early in the morning. In this bag they were transferred to the booth in the afternoon.

<sup>2</sup> To the lower edge of these formerly fawn hoops were tied, of which, however, only a few are left at present.

<sup>3</sup> To some of which—formerly to all, probably—small pieces of petrified wood about two and a half inches long and a quarter to one-half inches thick are fastened as rattles.

events of the day as they transpired in that chamber up to the time of the mutual public performance in the afternoon.

The priests having arrived in their kíva after the singing ceremony in the Antelope kíva all, except the two warriors, divest themselves of their costumes and arrange themselves around the fireplace and engage in a solemn smoke, which is followed by a prayer from each one present.<sup>1</sup> While the prayers by the different participants have a good deal of similarity, they are not quite alike, and some are longer than others. The lightning frames and thunder boards are lying near the fireplace. After this ceremonial smoke another smoke follows, which seems to be of a less solemn nature, and during which some conversation is going on. This being concluded, the two warriors also lay off their paraphernalia. At about this time Macángöntiwa's sister, who is an old woman and is also called Tcú Mana (Snake maid), brings several pots to the kíva, which she places on the outside at the south side of the hatchway. These she fills with water (see Pl. 192), in which she is assisted by several women.

The Snakes partake of no food or water on this day until the evening meal is served, after the public performance.

Early in the afternoon the Chief Snake priest makes two nakwákwosis, staining their strings red, as usual, and sends one of the men, belonging to the Badger clan,<sup>2</sup> after the herbs for the emetic. I had great difficulty to ascertain the nature of these herbs, but from information obtained from and substantiated by various members of the Snake Fraternity, and having seen the herbs in the pots while boiling, having furthermore picked up small remnants of them from the floor where they had been lying prior to being put into the pots, and also having obtained a bunch of the boiled herbs after it had been thrown away and also the fresh plants, I have from all this long been convinced that the two principal herbs are masí (gray) láchi (not to be confounded with the common or sakwá [green] láchi) and piwánnga (weasel medicine)—linum rigidum, Purch. The first grows abundantly around Oráibi, the other not, especially in dry years, although I have seen it several times. Whether hohóyaonga, the charm medicine, used throughout the ceremony and frequently mentioned in this paper, forms an ingredient of the emetic I have been unable to settle definitely.<sup>3</sup> From the information obtained from different sources, I

<sup>1</sup> In 1896 two small boys did not utter a prayer.

<sup>2</sup> A man of that clan is chosen, it is said, first, because the badger owns the herbs, is very fond of all kinds of roots, was once a doctor, and is now prayed to by the sick, his fat and pudenda being used as medicine—the latter, which is said to be "very hard," is used by impotent men—and secondly, because the badger "always scratches out roots."

<sup>3</sup> Some say it is used, some claim it is not.

## BRIDGE

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**PL. CXCII.**

- A. Women filling jars with water at the Snake kíva.
- B. The Snake kíva.

A



B







A



B



**PL. CXCIII. SCENES IN THE SNAKE KÍVA.**

- A. Repairing parts of the Snake costume.
- B. Resting.







**PL. CXCIV.**

Snake priests washing their heads.



am inclined to believe that if any is used, it is used in a small quantity, more as a charm, as which it is also used throughout the ceremony, than as an ingredient to produce vomisis.

The men have in the mean while started to repair their moccasins, kilts, head-dresses, etc. Some smoke, and here and there one takes a nap. (See Pl. 193.) All seem to be more or less sleepy after having been up at an early hour on this and the preceding mornings. Even the chief priest occasionally wraps himself up and enjoys a brief flight into dreamland. Almost constantly one or more are smoking. Towards noon all go out one after the other, pour some of the water from the pots south of the kiva into bowls, go about a hundred yards south of the kiva down the hill, and there wash their heads (see Pl. 194), after having converted the water into foaming suds with mashed yucca roots. The kiva is swept, the refuse being carried out. At about half-past eleven o'clock the chief priest sprinkles some dry sand on the space between the fireplace and the east banquette, covering a space of about five feet square. The banquette is also covered in the same way to the length of about five feet. Over the sand he sprinkles some meal. Some bring in two broken jars, I think from under a rock a few hundred yards southwest of the village. I understand that these shards are remnants of pots and jugs in which snakes have been kept on former occasions. In one of the shards suds of yucca roots are prepared, into the other one clear water is poured, whereupon both are placed on the floor south-west of the fireplace. The water is taken from the pots outside. These preparations are made for one of the most weird and unique rites throughout the ceremony, *the washing, or baptizing, of the snakes.*

Precisely at noon the chief priest sends one of his men to announce that all in the village must retire into their houses, as the washing of the snakes is about to begin. I am told formerly this injunction was very promptly and scrupulously heeded, but of late this seems to be less so. The men in the kiva are very solemn. When all is ready, the older men squat down on the north side of the sand field, two or three of the younger men on the south side east of the ladder; two west of and close to the ladder opposite the two bowls or broken jars. The large bag with the snakes is brought forward and placed in about the center of the kiva, and one of the men takes a place near by between the sack and the bowl with the yucca suds. All except the two men near the bowls hold in their right hand their snake whips. Their attire consists of the snake kilt and moccasins only.

When all is ready, the man near the sack puts his right hand into the sack, draws forth a snake, and hands it to the man opposite the

bowl containing the suds. He dips it into the bowl, and holding it in one hand, draws it through the other and then hands it to his companion, who repeats the operation with the reptile in the other bowl, and then places it on the sand field; another snake follows, and then another, etc. The men have in the mean while lit pipes and are solemnly smoking, handing the pipes from one to the other, exchanging terms of relationship. The snakes, of course, try to escape, but are herded, and sometimes pushed back with the whips. The smoke, drawn from the pipes, is constantly blown towards the snakes. But in spite of all these measures the snakes make desperate efforts to escape, not only the racers that glide and shoot swiftly up and down, but also the bull and rattle snakes. They crawl over and between the nude legs of the men, up their arms, etc., so that it often becomes necessary to take them with the hand and lay them back. As the number of reptiles increase it becomes more difficult to control them and keep them on the small place assigned to them, and for a time the men are kept very busy. The snakes, finding all their efforts to escape frustrated, finally huddle together in the two corners. It is simply appalling with what apparent unconcern those men handle the reptiles. My notes of 1896, referring especially to the case of old Nuvák wahū, who was nearly blind, say:

His eyesight is so poor that he could hardly see the pipes when they were handed to him, and the men had to touch his hands with the pipe before he would recognize its presence. I noticed several times a number of snakes, and among them several rattlers, in front of the old man, trying to get by him. He undoubtedly could see their outlines on the sand, and several times I noticed that his neighbors would draw his attention to them. Now and then he would slowly but unhesitatingly stretch forth his hand, feeling, as it were, his way among the snakes, before he could get a hold of them. Several times I saw two or three rattlesnakes raise their heads and draw them back, apparently in a threatening manner, when they saw the hand approach them, so that I expected nothing but that they would strike at any moment; and I must confess that the question so often asked, "What antidote do the Indians use against snake bite?" seemed very insignificant and of much less importance to me just then than the question, "How is it possible that one of these snakes, that is taken hold of again and again, and with such recklessness, does not strike, and that, when from forty to fifty reptiles are confined on such a small space?" In several instances I saw the snakes coiled at least partly and raise their heads and draw them back, apparently ready to strike.

The theory sometimes advanced, that the snakes are benumbed or

drugged is entirely unfounded. Not only does the alertness with which the snakes move about speak against this theory and snakes just captured are handled just as unconcernedly as those which have been secured before, but the superstition of the Indians would forbid them to subject the snakes to any such treatment as drugging them, extracting their fangs, etc. But how, then, can the mystery, for such it must appear to the superficial observer, be explained? While I do not pretend to be able to fully explain the matter, I offer the following suggestions: (1) The repeated handling of the snakes undoubtedly makes them more or less gentle. There is no question but what the priests are more afraid of the snakes when they first capture them than later. One of them, in explaining to me the details of the snake hunt, emphasized the fact that they at once commence to "tame" them by careful handling and by slowly stroking them, and when I asked him why so very seldom one was bitten by any snake, he said he could only explain it by the careful handling of the snakes. He said they never hurt the snakes and hence the latter became used to them and were not afraid of them. He compared the case with that of a wild pony, which, when first caught, would "kick, bite, and jump," but when repeatedly and carefully handled would become gentle; (2) The snakes, being often touched by the points of the snake whips, become used to seeing objects over themselves and to being touched by them, and hence do not find it so strange when a hand reaches towards or touches them. It must be added, however, that if this point explains anything, it does so to a limited extent only, as snakes are brought in even up to the last days, which from the very nature of the case have been handled but very little; (3) The principal explanation, therefore, does not, I believe, lie in the *frequency* of the handling, but rather in the *manner* in which it is done. I have again and again seen the snakes picked up in the kivas and on the plazas, put into and taken out of the jars, jugs, and bags, not only in Oráibi, but in all the other villages, by the old experienced priests as well as by the novices, but only very seldom have I seen one reach after or grasp a reptile with a quick, jerking, hesitating movement of the hand, and even on those few occasions the snakes were generally trying to get away, at least they were not in a proper position to strike when taken. Under ordinary circumstances the movement of the hand, in trying to take a snake is slow, gentle, but sure and unhesitating. I saw old, half-blind Nuvákwháhū reach towards several snakes, that with heads raised and drawn back, were watching the approaching hand, and that probably would have struck, since they were at least partly coiled, had they noticed the least twitching or jerking motion of the hand; (4) Never, at any

time, have I seen even the most experienced member of the Fraternity try to take a snake when the reptile was entirely coiled up. They seem to be convinced, and in fact have told me, that a rattlesnake does not strike unless entirely coiled up or at least nearly so. If a snake does coil up it is invariably first induced to uncoil by waving the snake whip over it.

But return we now to the bathing of the snakes. One has followed the other until all have gone through the two baths and been placed on the sand field. When the snakes see that they cannot escape they finally pile up in the corner on the floor and on the banquette (see Pl. 195), enjoying the sunshine that falls on those places through the hatchway just at that time. Occasionally one tries to escape, especially the racers, but usually one or two boys, who are left in charge, can manage them. When the washing is completed, the three men who handled the snakes carefully wash their hands and then the chief priest and one or two others usually utter a brief prayer, whereupon all seat themselves around the fireplace and smoke, exchanging terms of relationship. The snakes are left in charge of one or two of the small boys. In 1896 little Hóveima, who was then a lad of about ten years, herded or watched them alone (see A, Pl. 195), though they kept him very busy when the other men had withdrawn.

At about two o'clock the snakes are replaced in the large bag, usually by the men who bathed them and the boys who watched them afterwards. Often the largest ones are picked out and put into the small snake bags by the men. I have seen them pick out several of the larger ones and measure them, selecting the largest they could find. Little Hóveima had on one occasion selected a large bull snake, which he was trying to get into his little snake bag. Before he could close the bag, the snake would shoot out past his face, which elicited from him several times a half-despairing, "Icaná!" (Oh my!) Finally, however, he succeeded in subduing and confining the protesting reptile. After all the snakes have been put away, all wash their hands and the chief priest sweeps up and carries out the sand.

The washing of the snakes is considered by the snake priests to be one of the most sacred and solemn rites of the whole ceremony, and has been witnessed, as far as I know, by only two white persons besides myself, Professor Ehrenreich from Berlin, Germany, and a government employee who had been with the Hopi for a number of years. In both cases, however, the priests acquiesced in the presence of the men only after arguing the case a long time, in which they were so serious, that in the case of the last named gentleman, the washing took place over an hour after the appointed time, and even then they



PL. CXCV.

Herding the snakes in the kiva after the snake washing.

A



B





did not give their consent, but simply dropped the matter and let the man remain, though under protest.<sup>1</sup> At no time have the Oráibi Snake priests compromised themselves by accepting any of the many offers made to them (either directly, or through the author) of money, shells, calico, etc., for the privilege of witnessing the performance in the kiva. All such overtures have consistently met with positive refusals by the Snakes.<sup>2</sup> The Antelopes are somewhat less conservative, and have on several occasions permitted parties to come in, even to do some photographing. In the other villages, especially those of the Second Mesa, it is less difficult to get into the kivas while ceremonies are going on, although it is by no means an easy matter, and to be had for the mere asking. Everywhere, however, it has been found that the Snake priests especially objected when the question of permitting a woman to witness their kiva rites was raised.<sup>3</sup> They say women are especially obnoxious to the snakes.

The snake washing in the Oráibi ceremony varies from that in the other villages in several respects. In the latter, the washing itself is done, so far as I have observed, by older members of the Fraternity, in Oráibi by the younger men, one of them in one case being a novice. There the men, especially the one who washes the snakes, put on parts of their costume that are typically war paraphernalia—such as the bandoleer, *hurúnkwa* (a'peculiar head-dress, consisting of bunches of feathers of different birds tied to two hollow sticks), etc., which is not the case in Oráibi, where, in fact, these two objects are wanting in the Snake costume, although the members of the Snake Fraternity are all called *kaléhtakas* (warriors). Furthermore, in Oráibi, the utmost silence and solemnity prevails during the washing of the snakes, while in all the other villages loud singing and rattling accompanies the act. These facts, in connection with others, for instance that the older Snake costumes are said to be made of material taken from slain enemies, especially the buckskin *wokókwāwa* (big belt), that the spots on the bodies, as has already been explained, are the same as were

<sup>1</sup> In the case of Professor Ehrenreich I obtained the permission of the priests, but also only after considerable arguing, and after throwing into the balance a message from the Indian Agent to the Chief Snake priest, that he would consider it a personal favor if they would permit Professor Ehrenreich to enter the kiva, as he had come from such a long distance.

<sup>2</sup> On a few occasions I have succeeded in taking parties into the kiva when nothing special was taking place, and only one man was present, whose permission I obtained. But he generally allowed them to stay in the kiva only a few minutes. On a few occasions single persons have also gone into the kiva themselves when the men were away, about which the priests complained bitterly when they found it out later.

<sup>3</sup> As far as known no white woman has ever been permitted to witness any rites in any Snake kiva with one exception: In 1901 the Snake chief of Mishóngnovi permitted the author's daughter, a girl of sixteen years of age, to witness the snake washing. He excused the exception on the ground that she had been with the Hopi a long time, had seen many of their secret ceremonies, and could talk their language.

formerly made on the warrior's body before he went into battle, etc., seem to leave no doubt that a certain relation exists between the Snake ceremony and perhaps certain war ceremonies that may formerly have been in vogue, but just what the nature of this relation is, I am unable to say. I am told that in the old time, if a Hopi was slain it was the duty of the Snake, Coyote, and Burrowing Owl clans to hunt up the murderers and avenge the death of their tribesman; it was also in a general way, their duty to serve as a kind of police force in the village, watching over the safety of the village chief and of the village. And in battles, these three clans are said to have been in front, engaging the enemy with war clubs, the others following with bows and arrows.

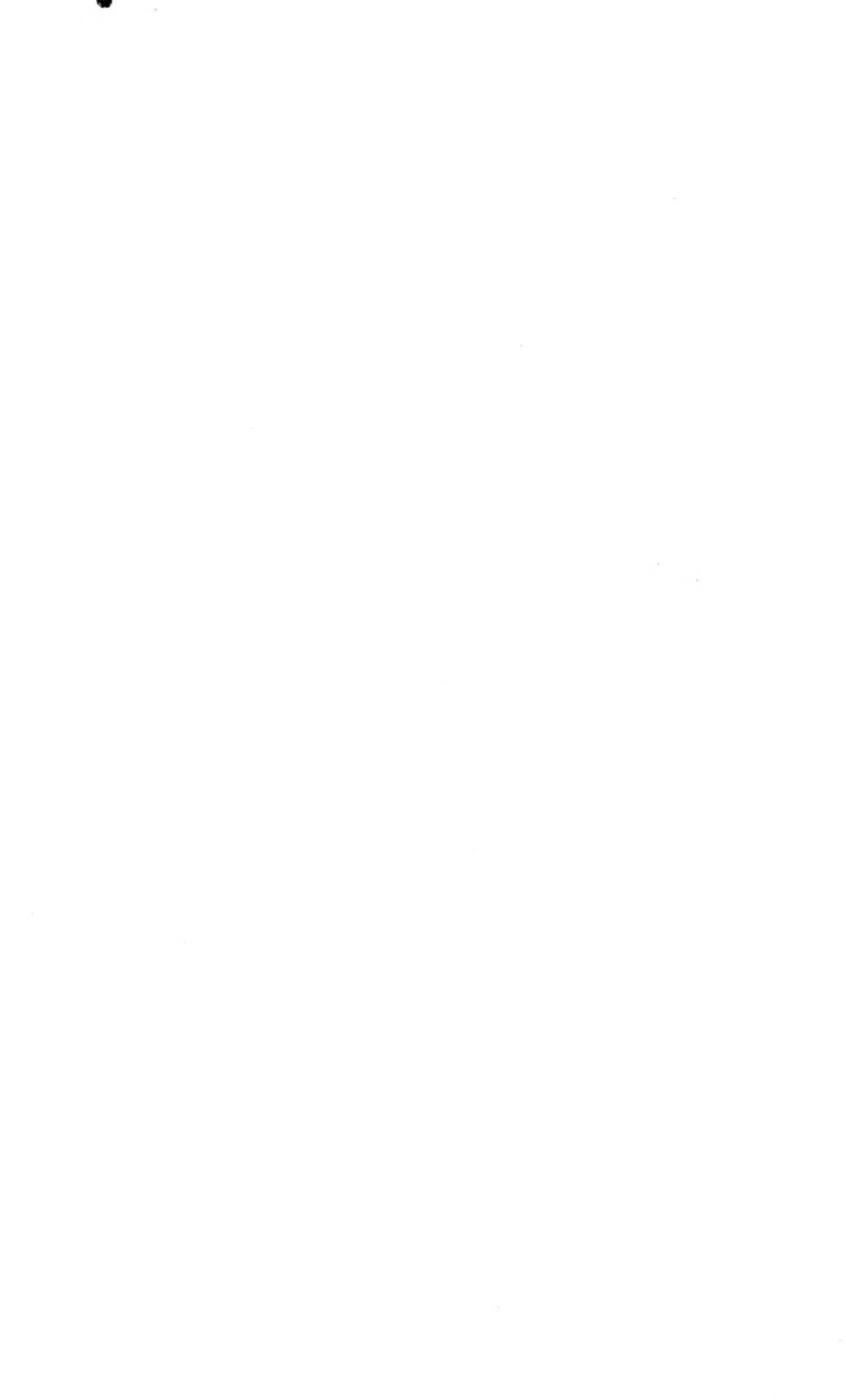
The rest of the afternoon, to the time of the public performance, is spent in putting the snake costumes in order, decorating the bodies and dressing up for the public performance. The body decoration as well as the costume has already been described in connection with the ceremony in the Antelope kíva, in the morning of this day. Both are the same in the afternoon. It may be mentioned that occasionally the costume is not complete, the party not having any beads or a fox-skin. Sometimes they go and borrow those objects, but sometimes they do without them.

About half an hour before the public performance begins, the chief priest takes the bag with the snakes out to the booth, placing it on the ground in the center of the booth.<sup>1</sup>

We now again leave the Snake priests standing in line at the west side of the ladder, whips and snake bags in hand, waiting for the announcement from the Antelope kíva that the time has come for them to go to the plaza and repair to the Antelope kíva, to record briefly the events of the day in this chamber from the time of the morning meal, when we left that kíva, up to the time of the mutual performance, the so-called Snake dance on the plaza.

One of the first acts that takes place in the Antelope kíva after breakfast is the partial dismantling of the altar. The eagle feathers are taken out of the sand ridge, the crooks and sticks from their small pedestals, the contents of the bátni are thrown on the sand mosaic, in short, everything is taken up except the following objects, which are removed later in the day: one tiponi, one báho, the medicine bowl, a tray with sacred meal, one netted gourd vessel, one corn ear, and the

<sup>1</sup> In 1896 he had forgotten to do this, which I noticed. I waited until they were standing in file ready to go out, and then told him. The fact caused considerable excitement and consternation, and the old chief said, "Ishohí, nu put ka hin üuna!" (Oh, my, I did not at all think about it!), dropped his whip, etc., grabbed the sack with the snakes and rushed with it to the plaza, where he deposited it in the booth.



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ANTHROPOLOGY, PL. CXCVI.



Photo by G. Wharton James

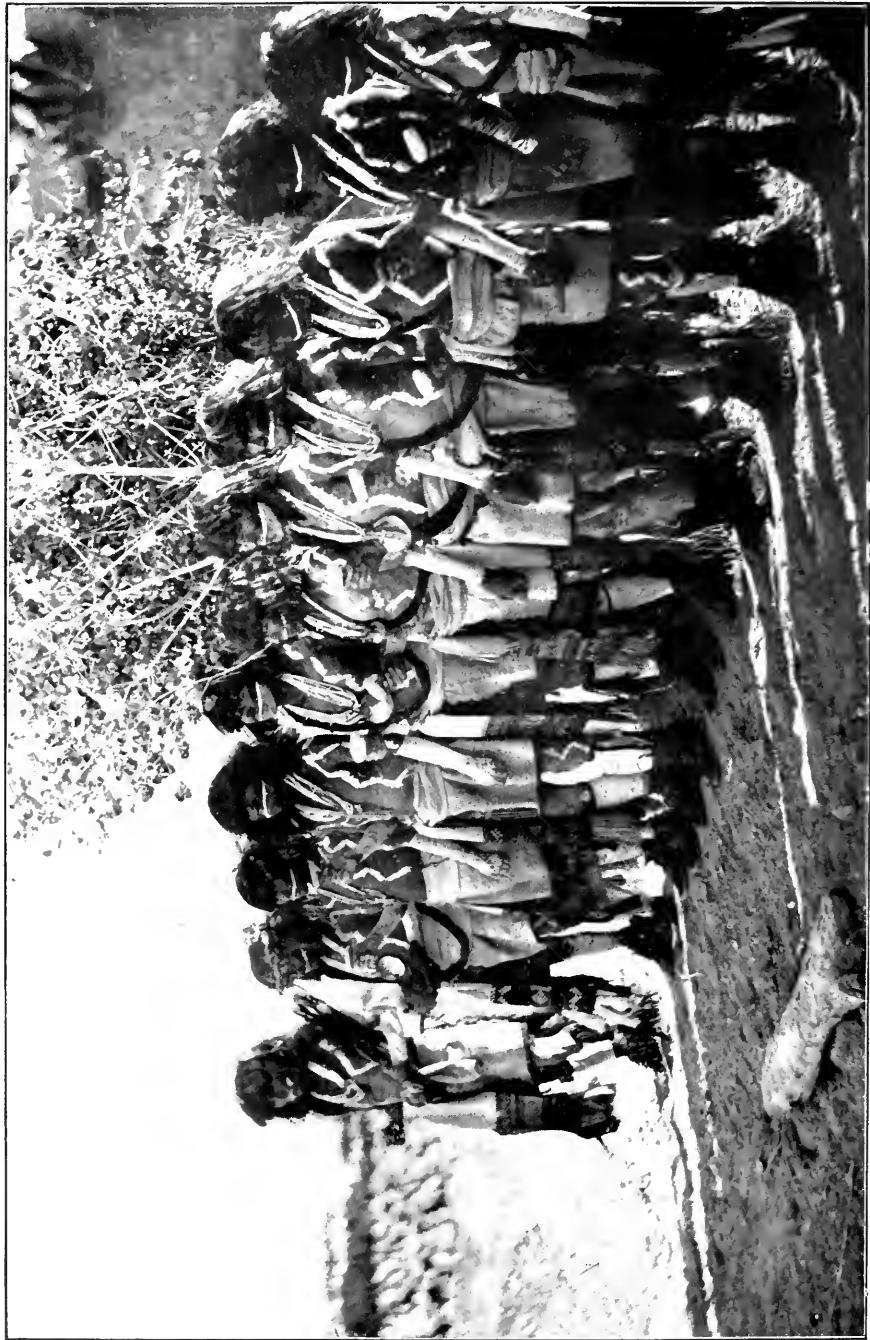
**PL. CXCVI.**

This Plate shows the Antelope priests partly dressed up prior to the public performance on the eighth day. On the floor may be seen the altar, partly dismantled, as it appears in that day.

## வாய்க்கால

வாய்க்கால முறை என்பதை விட்டு வாய்க்கால நிலை என்று அழைகின்றனர். இது முறை என்றால் சமீபத்திர முறை என்று அழைகின்றனர். இது முறை என்றால் சமீபத்திர முறை என்று அழைகின்றனர்.





**PL. CXCVII.**

The Antelope dancers in line on the plaza (ninth day).

BE EXCUSE

for accepting your gift in time of the play - on the 22<sup>nd</sup>



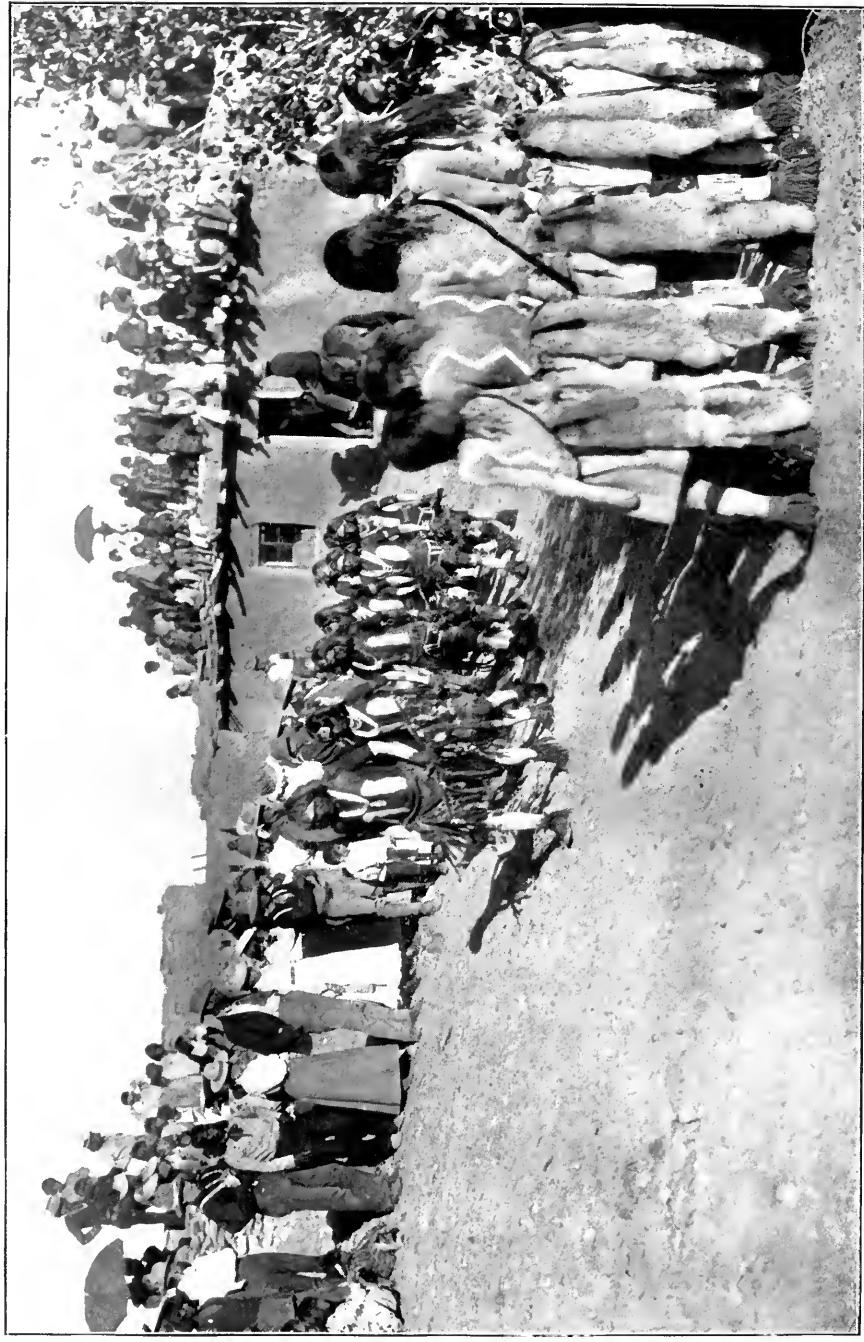


PL. CXCVIII.

Chief Antelope priest with tiponi, meal bag, and rattle and asperger with medicine bowl and aspergill (ninth day).







**PL. CXCIX.**

**The Snake dancers arriving on the plaza (ninth day).**

$$\phi_0 \in \Omega^{0,1} = \{ \phi_0 = \phi_0^1 dx_1 + \phi_0^2 dx_2 + \phi_0^3 dx_3 + \phi_0^4 dx_4 \mid \partial \phi_0^i = 0 \}$$





Photo by G Wharton James

**PL. CC.**

The Snake dancers describing the circles in front of the booth (ninth day).

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Photo by G. Wharton James.

**PL. CCI.**

Both platoons performing. The Snake dancers making the lateral motions to the time of the humming of a song.

100.00  
SALVATORE RIZZOLI - 100.00  
ANNEKE VAN DER MEULEN - 100.00



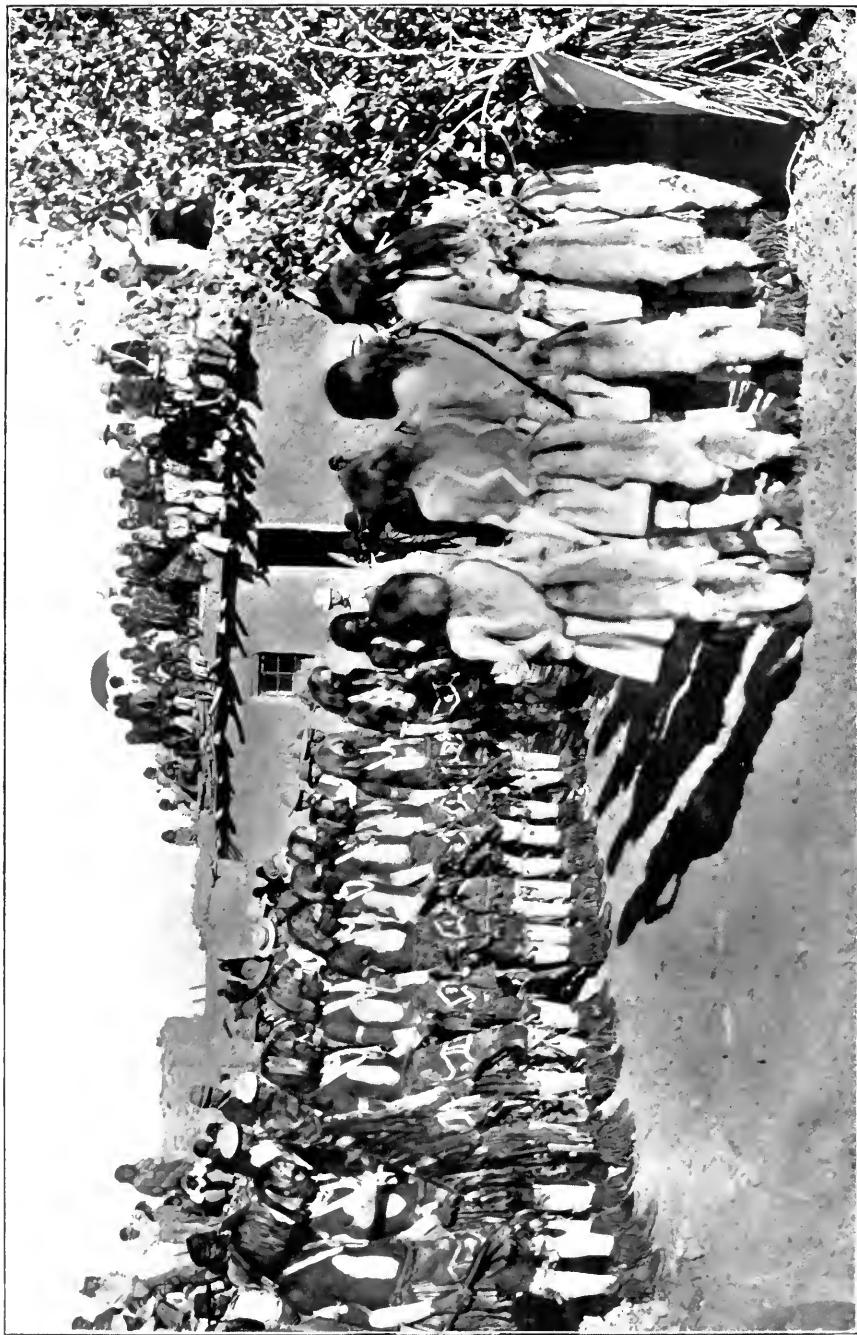


Photo by G. Wharton James.

**PL. CCII.**

Both platoons performing ; the Snakes dancing, which they alternate with the humming.

the following diagram illustrates the general scheme of the reaction:

The reaction scheme shows the following steps:

- A benzene ring with substituents  $R_1$ ,  $R_2$ , and  $R_3$  reacts with a Grignard reagent,  $R'L_i$ , in the presence of  $CuI$  and  $CuCl$ .
- This forms a cyclohexadiene intermediate where the ring has lost one carbon atom.
- The intermediate then undergoes further reaction with  $R'L_i$  and  $CuI/CuCl$ .
- This results in the final product, which is a substituted cyclohexadiene with a different set of substituents.

long, black eagle feather, used for the so-called "náwuhchingwu" (absolving or discharming rite), at the conclusion of the ceremony. (See Pl. 196.)

In the forenoon the báhos and nakwákwois that were made by the participants on the previous day and also the water in the móngwíkurus, were taken by them to their field, peach orchards, and water-melon patches, where they disposed of the prayer offerings and poured out the water, bringing the vessels back to the kíva. The báho with the long "road," I understand, is deposited by the chief priest on the east side of the mesa, the four chochókpis from behind the long medicine bowl in the sand ridge by Sihongwa in his fields. The rest of the time is devoted to repairing or making new paraphernalia for the dance costumes. To this is added in the afternoon the work of decorating the bodies. These decorations are as follows: The bodies are daubed black, but only a very thin coat being applied. The face, hands, and feet are also daubed black, the chin being covered more heavily than the other parts of the body. A white line is drawn from ear to ear over the upper lip. The legs below the knee and the arms below the elbow are also painted white. From the shoulder to the waist, in front as well as behind, and also on the upper arms and thighs, are drawn white zigzag lines, which are called lightning marks, because they represent lightning. (See Pl. 197.)

The costume of the Antelopes consists of the usual dancing kilt and sash, from the latter of which a foxskin is suspended behind; furthermore a dark blue yarn bandoleer, moccasins, beads, and the feather head-dress (tcðb-nakwa). (See Pl. 199.)

When the time for the ceremony has arrived, the chief priest takes in his left hand the típoni and meal bag, in his right hand the Antelope rattle, the sprinkler, the medicine bowl, and aspergill (see Pl. 198), and all the others take their rattle only, whereupon they proceed to the plaza and go through the same performance in front of the booth as on the previous day. When they have made their four circuits and lined up in front of the kísi, the Snakes arrive, the chief priest carrying the bów nátsi. (See Pl. 199.) They also go through the same performance as on the previous day (see Pl. 200) and then line up. The Antelope priest again sprinkles two meal lines between the two platoons, as on the previous day, whereupon the Snakes step on their line and pause a few minutes. Then follows the humming, with side-wise waiving of the snake whips (see Pl. 201), followed by the louder singing, accompanied by vigorous dancing, etc., in the same manner as described in connection with the public performance of the previous afternoon. (See Pl. 202.)

When the singing ceases, the Snakes arrange themselves in pairs. One thrusts his snake whip behind his sash in front, the other lays his left hand on the left shoulder of the former and begins to stroke his back with the snake whip. (See Pl. 203.) Both then move with a slow, dancing step towards the booth, where the first man kneels down and is given a snake by a man inside the booth, who may be any one of the participants.<sup>1</sup> This snake he places between his teeth, grasping its body with both hands; both move slowly around in a sinistral circuit, the holder of the snake moving it and also stepping to the time of the singing. (See Pls. 204, 205, 206, and 207.) In Oráibi the men usually take a hold of the snake close to its head, while in other villages this is not the case. In fact, the handling of the snakes in the public performance is much more reckless in the other villages<sup>2</sup> than in Oraibi, and I have heard men from other villages remark on and laugh at the careful handling of the snakes by the Oráibi Snake priest, saying that they do not consider it difficult to perform the Snake dance in such a manner. The Oráibis, however, place to their credit the fact that they have no one watching the head of the snake as is the case in the other villages.

Every dancer drops (see Pl. 208) his snake after a few minutes and gets another one, the snakes thus dropped being picked up by another set of men, the snake gatherers, who throw a pinch of meal towards the snake that they wish to pick up, just as the dancers do. (See Pl. 209.) Some of the snakes are dropped towards the north, others towards the west, others towards the south and east of the dancing circle.

I have been told by a Snake priest that they are not allowed to expectorate during the whole performance outside of the kíva, but have to swallow any sputa that may collect in their mouths, even while holding the snakes. They say if any one should step on their sputa or in any way whatever come in contact with it, he would be affected by the peculiar snake charm; i.e., some part of his body would swell up and if not discharmed, burst.

While the Snake dance is in progress, the sprinkler asperges the dancers from the medicine bowl at short intervals. The other Ante-

<sup>1</sup> I was told by one of the Snake men that formerly the snakes were kept in a large pot instead of a sack, and that no one handed the snakes out. He stated that when they then lifted the lid to get a snake they would sometimes have great difficulty in keeping other snakes from getting out of the vessel. On one occasion he had to call for assistance, as he could not control the snakes and get the lid on.

<sup>2</sup> I have there seen dancers hold two, three, and on one occasion even four, snakes at one time between the teeth, the reptiles intertwining into a ball as it were in front of the dancer's mouth. On one occasion I saw a snake that was held about midway of its length trying to get into the ears and nose of the dancer; several times I noticed a man having stuffed a small snake into his mouth entirely, the head of the reptile only protruding from between his lips.

$$P(1+2\sqrt{m})^2 \leq 49$$

$\mathcal{F}_n$  is a family of sets with cardinality at most  $2^{n+1}$ . By the pigeonhole principle, there must be two distinct sets in  $\mathcal{F}_n$  with the same cardinality.

**PL. CCIII. THE SNAKE DANCE.**

The Plate shows old Nūvákwhu in the act of stroking his companion's back, and a rattlesnake in the mouth of one of the dancers.



Photo by G. Wharton James.



ANSWER TO Q. 15

and the best no less than good. But it is a very difficult thing to get rid of the old, and to get rid of the old we must get rid of the new.

PL. CCIV. THE SNAKE DANCE.

Two dancers, with their companions, are seen on the plate as they proceed in a circle in front of the Antelopes. It sometimes becomes necessary to re-arrange the position of the snake in the mouth of the dancer or to take a new hold of it. The first dancer shown on the Plate is seen in the act of doing it.



Photo by G. Wharton James.



20 AUGUST 1942 VOL 142

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RECORDED BY THE AIR FORCE AND THE NATIONAL GUARD OF THE STATE OF CALIFORNIA  
IN THE CITY OF LOS ANGELES ON 20 AUGUST 1942  
FOR THE INFORMATION OF THE AIR FORCE AND THE NATIONAL GUARD OF THE STATE OF CALIFORNIA  
IN THE CITY OF LOS ANGELES ON 20 AUGUST 1942

**PL. CCV. THE SNAKE DANCE.**

The special feature of this plate is that it shows in the case of the two dancers the manner in which the snakes are generally held in Oráibi, which differs from the manner in which the dancers on the other mesas hold them, as has been more fully explained in the text.



Photo by G. Wharton James.



1992-324-12-17-A-10

After a period of time, the system will reach a steady state where the error is minimized.

**PL. CCVI. THE SNAKE DANCE.**

Several dancers, who have released their snakes, are seen crowding toward the entrance of the booth to receive another reptile.



Photo by G. Wharton James.





**PL. CCVII. THE SNAKE DANCE.**

Three "pairs" of dancers in a line, little Hóveima, the youngest, heading the line. All aim to touch the plank with the right foot.

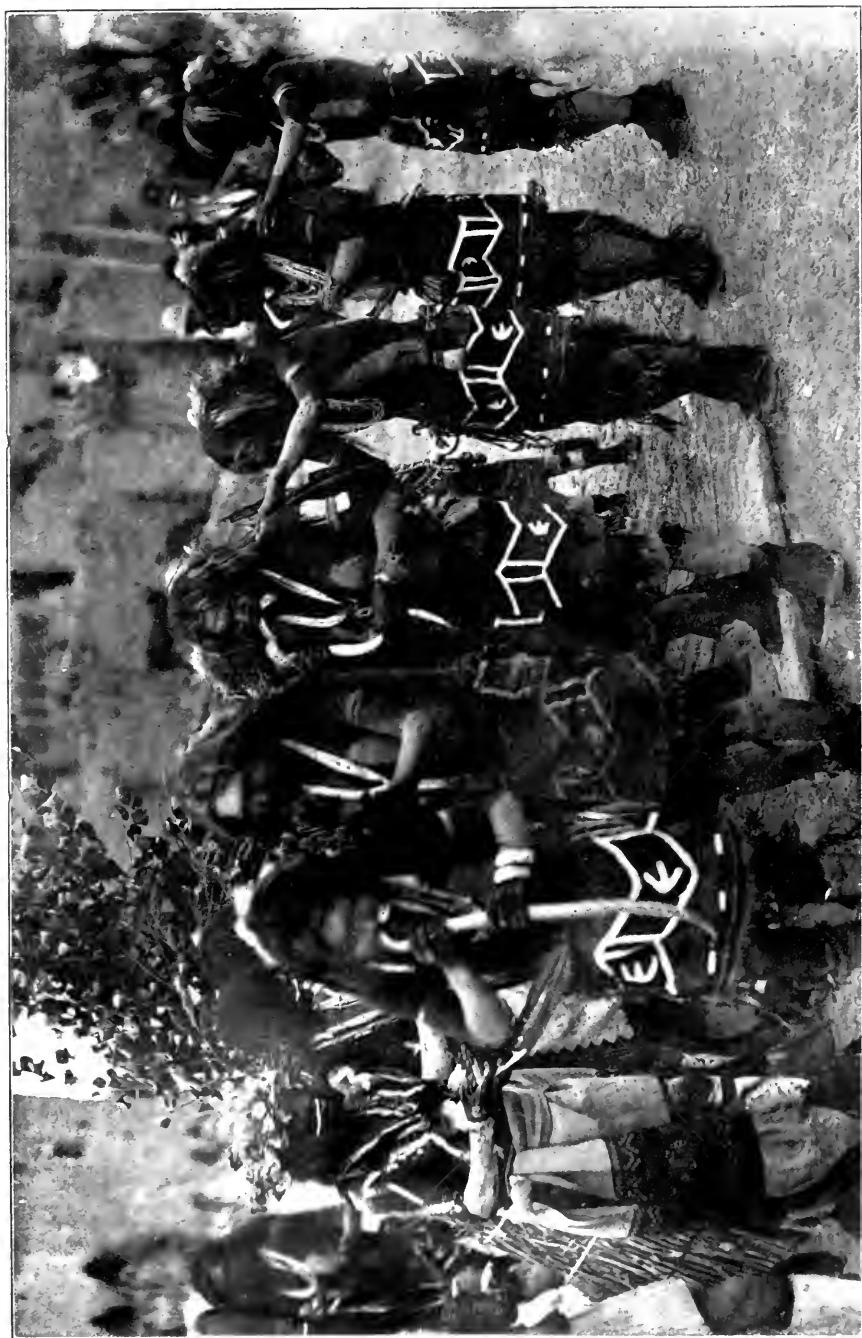


Photo by G. Wharton James.



For more information about the CDR, contact the Office of the Director, Center for Devices and Radiological Health, U.S. Food and Drug Administration, 5600 Rockville Pike, Bethesda, MD 20892.

**PL. CCVIII. THE SNAKE DANCE.**

One of the dancers has taken the snake from his mouth, and is ready to release the same.

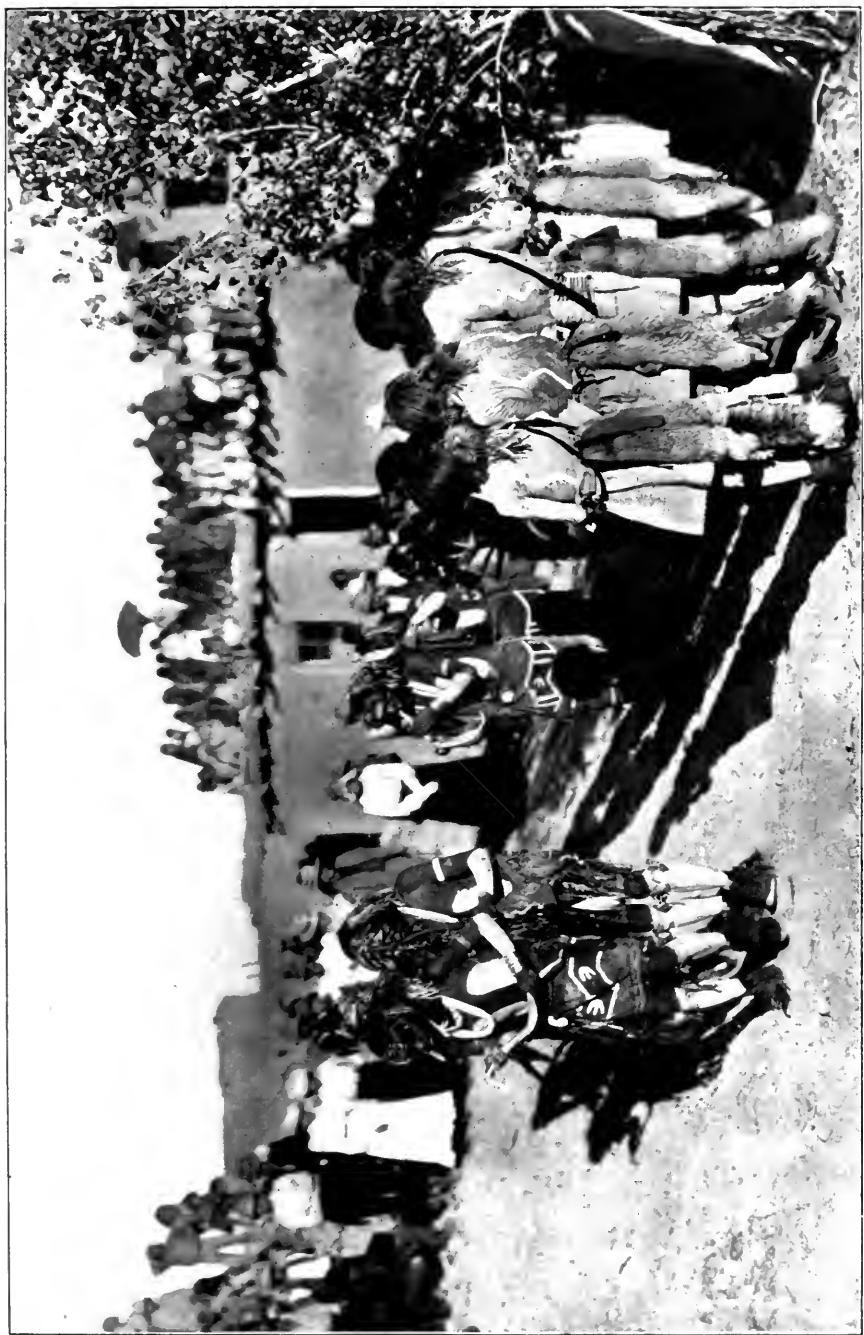


Photo by G. Wharton James.



Digitized by srujanika@gmail.com

ed una borsa di studio per la laurea universitaria.

**PL. CCIX. THE SNAKE DANCE.**

Sprinkling sacred meal on a released snake.

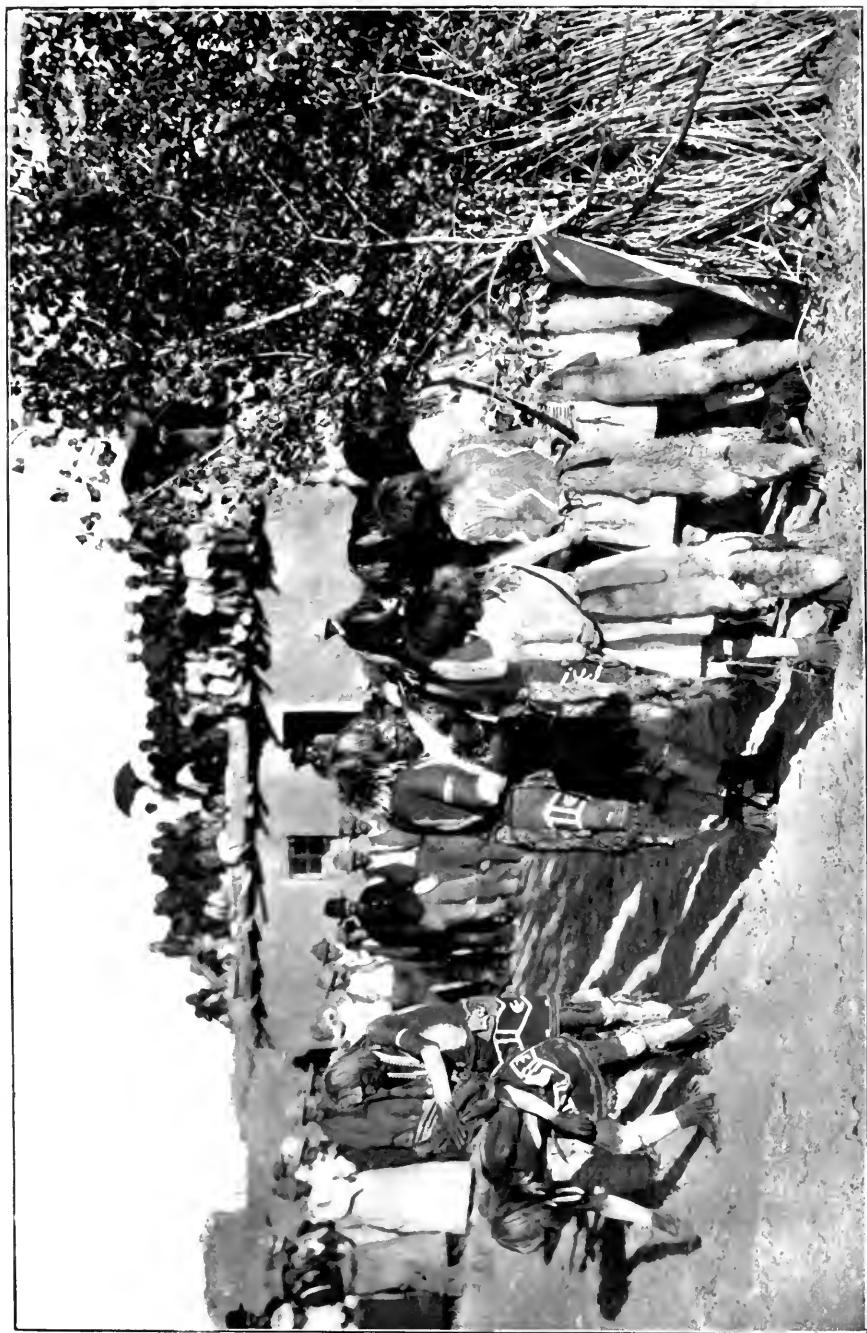


Photo by G. Wharton James.







**PL. CCX. THE SNAKE DANCE.**

A snake gatherer in the act of picking up a snake.

$$g(\mathcal{C}^{\ast},\mathcal{Q}) = \left( \frac{1}{2} \right)^{n-1} \cdot \left( \frac{1}{2} \right)^{n-1}$$

$$\int_{\Omega} \partial_t u \partial_t v - \int_{\Omega} u \partial_t v = 0.$$



FIELD COLUMBIAN MUSEUM.

ANTHROPOLOGY, PL. CCXI.



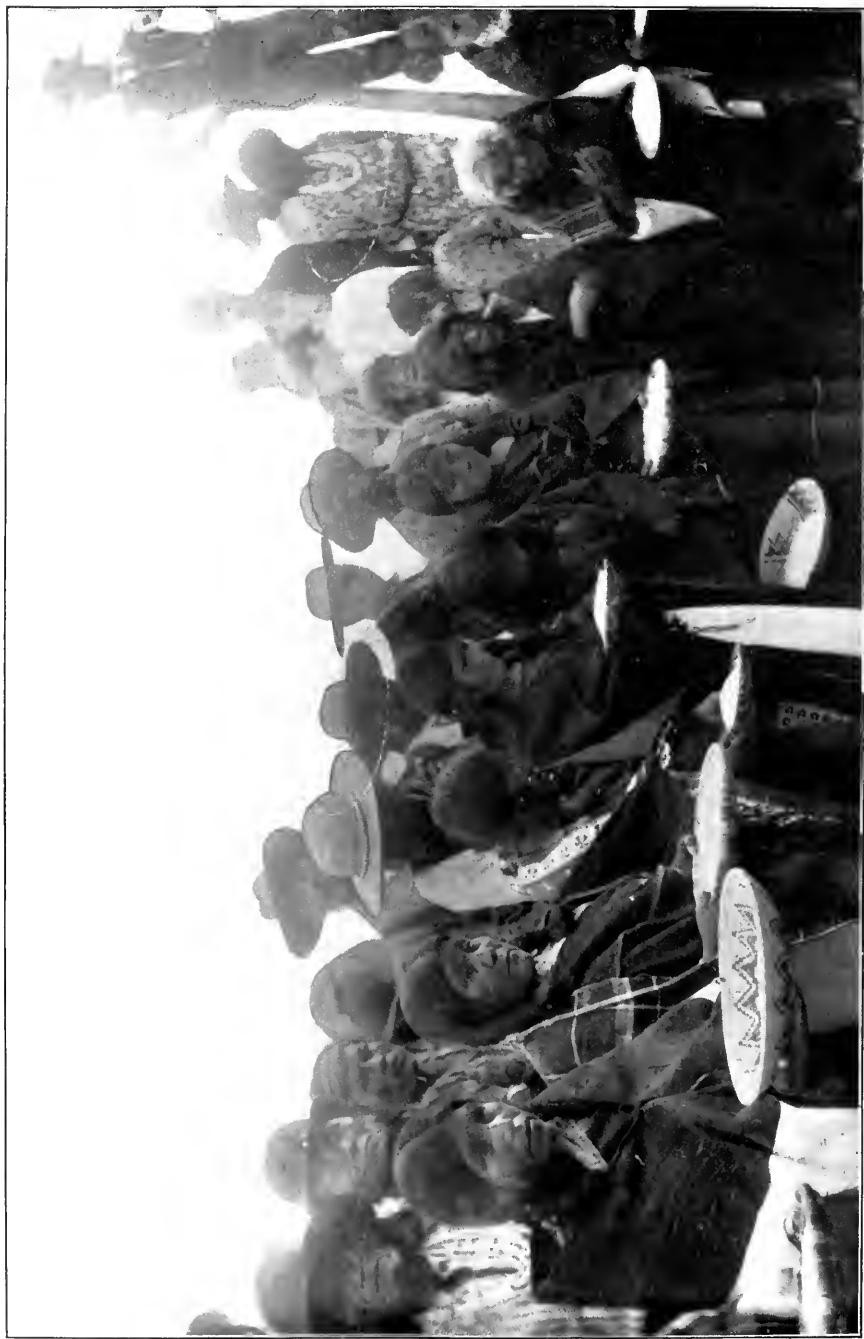
Photo by Sumner W. Matteson.

**PL. CCXI. THE SNAKE DANCE.**

Various snake gatherers with handfuls of snakes.

1. *Leptodora* *hirsutum* *L.*  
2. *Leptodora* *hirsutum* *L.*

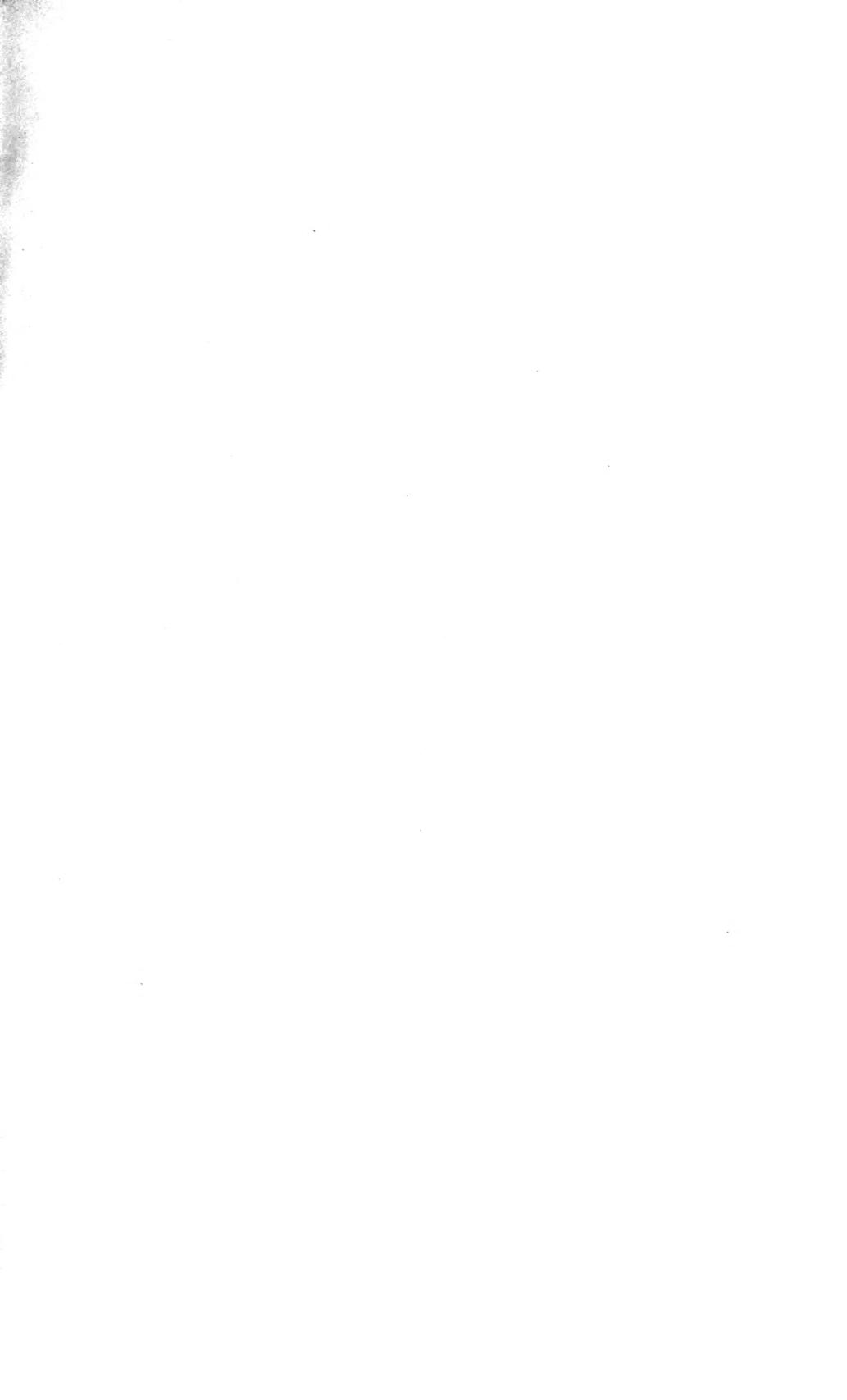


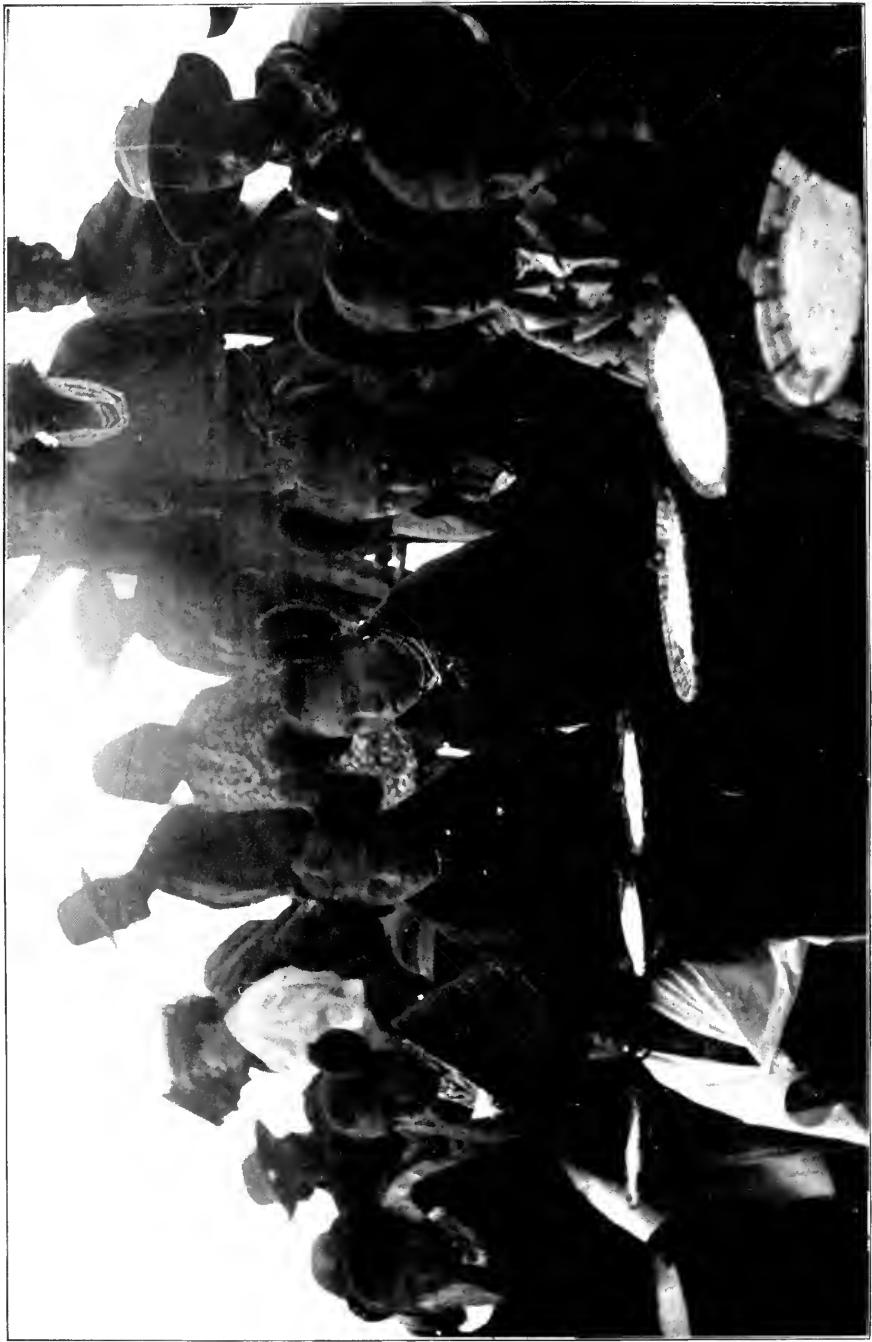


**PL. CCXII. THE SNAKE DANCE.**

Women waiting with sacred meal, to be sprinkled on the ground where snakes will be thrown in a pile by the dancers.

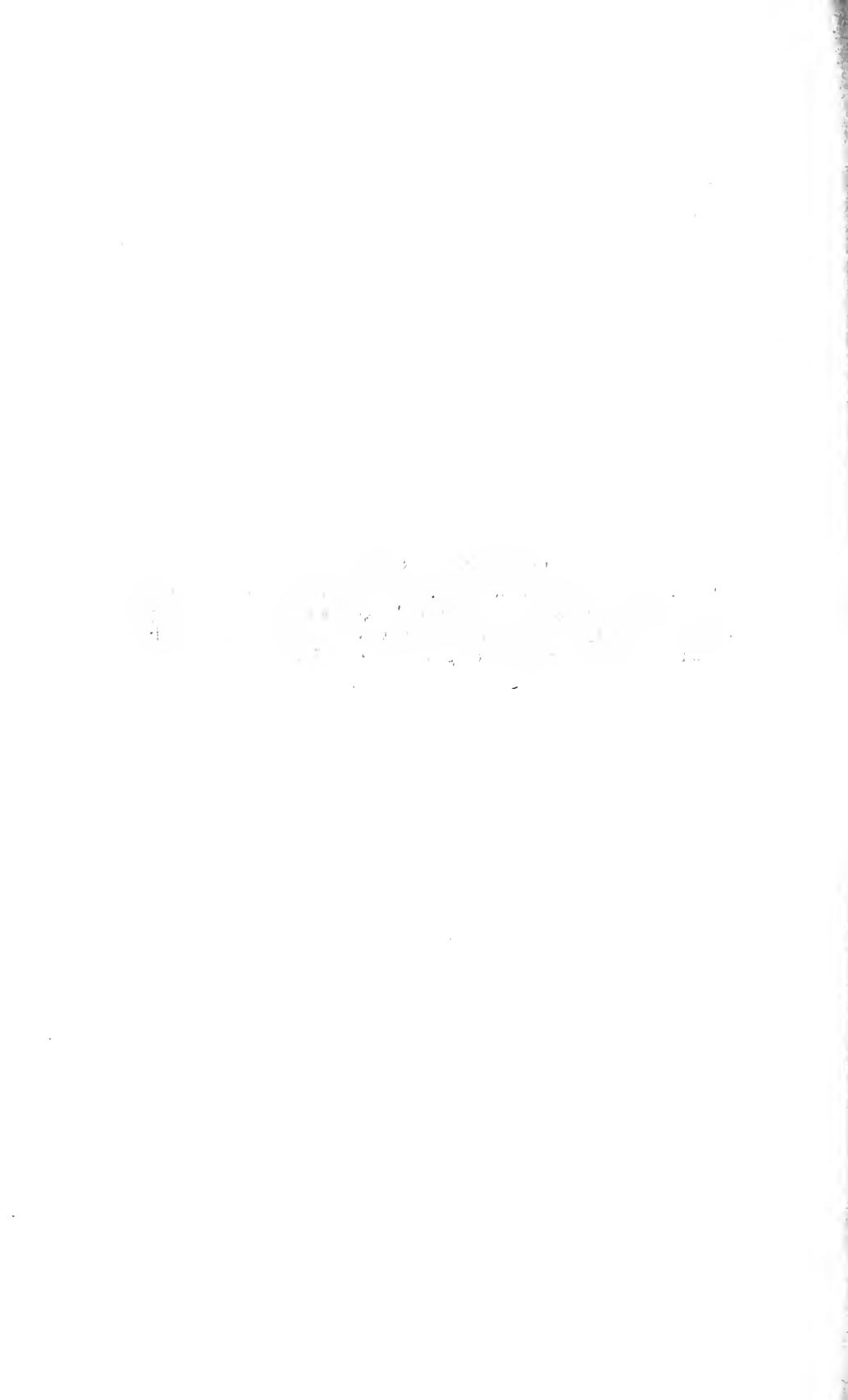
$$\begin{aligned} & \text{Let } \mathcal{O}_I = \{x \in \mathbb{R}^n : \|x\|_I \leq 1\} \text{ be the unit ball in } I^n. \\ & \text{Then } \mathcal{O}_I \text{ is convex and symmetric about the origin.} \end{aligned}$$





PL. CCXIII. THE SNAKE DANCE.

Maidens with sacred meal, which is to be sprinkled into a meal circle, into which the snakes will then be thrown to be grabbed and carried away by the dancers. (This scene, as well as the one shown on plate 212, is from Wálpi, as no good photograph of the corresponding scene in Oráíbi was obtainable.)





A



B



PL. CCXIV. THE SNAKE DANCE.

- A. A Snake racer arriving at the kiva.
- B. The meal circle on the ground into which the snakes are thrown in a pile after the dance.

$$\partial \mathcal{P} \mathcal{R} = \{x \in \mathbb{R}^n : \exists \lambda \in \mathbb{R}, \forall i \in \{1, \dots, n\}$$

$$f_{\theta}(x) = \frac{1}{\sqrt{2\pi}}e^{-\frac{(x-\mu)^2}{2\sigma^2}} + \frac{1}{\sqrt{2\pi}}e^{-\frac{(x-\mu_2)^2}{2\sigma_2^2}}$$





**PL. CCXV. THE SNAKE DANCE.**

Grabbing the snakes from the meal circle, in order to take them from the mesa and release them.







**PL. CCXVI.**

A dancer returning to the kiva with his Snake costume after having released a handful of snakes.

### *2. I&O*

As of 1996, the total number of patients with primary hypertension in the United States is estimated to be 50 million.

lopes sing and rattle, moving their right foot slightly forward and backward, in the same manner in which they and the Snakes danced backward and forward on the previous evening, while the dance with the vine bunch was in progress. When all the snakes from the kísi have been used, the dancers take from their bags the large bull snakes for a last, culminating effect, as it were. During the whole time, while the dance is in progress, the Antelopes sing and rattle and keep moving their right foot forward and backward. If the snake gatherers get too many snakes in their hands, they hand some to the Antelopes, especially to the younger members. Sometimes the gatherers hold as many as four, five, and even more snakes in their left hand. (See Pls. 210, 211.)

As soon as the last snake has been picked up the chief Snake priest goes a few yards north-east from the dancing place, where a number of women and maidens are standing with trays containing meal.<sup>1</sup> (See Pls. 212 and 213.) All the Snake men holding snakes hand them to the Antelopes and all follow the chief priest. The latter sprinkles a meal circle on the ground and in the circle the six ceremonial lines. (See Pl. 214, B.) The girls and women then throw their meal into the circle, whereupon all who hold snakes throw them on one pile into the circle—a horrible, hideous, wriggling mass! No sooner has the last reptile been thrown down than each Snake dancer, except a few of the older men, grab from the pile of snakes with both hands as many as they can get and then dash with their handfuls of writhing reptiles from the village (see Pl. 215) and north, west, south, and east, those running to the last three points down the mesa, where they release the snakes. Before they return to the village, they take off their snake costumes and wash off their paint, water having been taken out for that purpose beforehand by the Snake priests themselves during the day.

Their costumes they wrap up in their blankets, which have also been taken out to them, and take them into the Snake kíva. (See Pl. 216.) Those Snake men who do not take away snakes, circle around four times in front of the booth again and then enter their kíva, whereupon the Antelopes do the same thing, laying off their paraphernalia and washing off their paint upon having entered their kíva.

As soon as the Snake man has taken his costume into the kíva, he comes out again and then drinks about a pint of emetic that women have in the mean while brought to the kíva from the Snake maid's

<sup>1</sup> These are all members of the Snake clan, though not necessarily of either the Antelope or Snake Society. The meal thrown is said to be an "íhpa" (bed).

house, where it was prepared.<sup>1</sup> (See Pl. 217.) The emetic is a decoction of a dark, greenish color, and is said to taste bitter. As soon as the emetic has been swallowed the men kneel on the edge of the kíva, and irritating their pharynx with their fingers, produce profuse vomiting. (See Pl. 218.) This, they say, cleanses them from the snake charm already mentioned so that they can again associate with the other inhabitants of the village. Yet this purification is not complete until they have gone through another discharging rite, which will be described presently. After having vomited, each one drinks some of the water from the jars and jugs at the south end of the kíva, and then enters the kíva and sits down to rest or to smoke. As soon as all have entered the kíva the final purification ceremony takes place. All participants stand around the fireplace in a half-circle, first taking off their moccasins. The Chief Snake priest takes a long buzzard feather in his left hand, a pinch of ashes in his right hand, and all the others some ashes in their right hand. All then hum the náwuhchi tawi (discharming song), waving their hands slightly up and down to the time of the singing. The men hold between their left thumb and forefinger a pinch of ashes, which they have taken from their right hand. This they circle from right to left four times at a certain point of the song and then throw it towards the hatchway, the chief priest doing the same with the feather and wiping the ashes from the feather toward the hatchway. He sprinkles another pinch of ashes on the feather, the others take a new pinch from the right hand, and the same performance is repeated five times, corresponding to the number of verses in the song. After the last stanza all beat off the ashes from their hands, rub their bodies and limbs with their hands, and then sit down for the evening repast, which the women have in the mean while brought to the kíva and which is so much the more enjoyed, as none of them has touched any food or water since the previous day.

After supper the kísi is taken down, usually by one or several of the young men, and apparently without any ceremony. The smaller branches are thrown off the mesa, the larger ones they sometimes use for constructing the booths in which the Hopi watch their fields in the summer months.

The altar paraphernalia are wrapped up, and later in the evening taken to the home of the Snake clan, where they remain when not in use. Here the Snake costumes are also kept.<sup>2</sup> The Antelopes, upon

<sup>1</sup> The emetic has thus far always been prepared in the house of Macángöntiwa's sister. Two large pots are filled with water, the herbs are tied in bundles and thrown into the water, and the whole is boiled for several hours. It is said that formerly the ancestral home of the Snake clan stood a few hundred yards farther west, but that has entirely disappeared.

<sup>2</sup> In the other villages each member of the Snake Fraternity takes care of his own costume.



**PL. CCXVII.**

Women bringing the emetic to the Snake kiva. The first one is the one who boils the emetic.

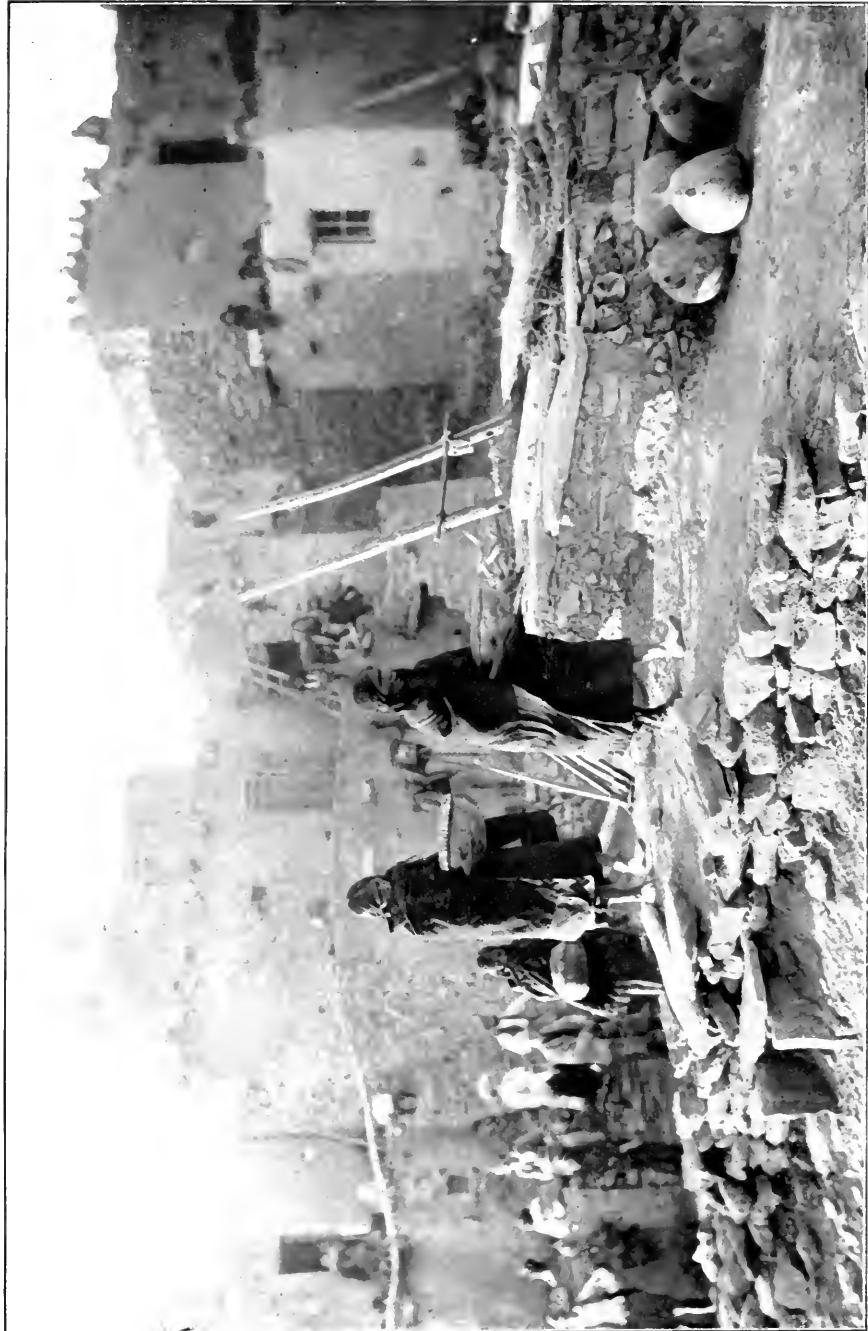


Photo by G. Wharton James.





**PL. CCXVIII.**

Exit, snake charm.

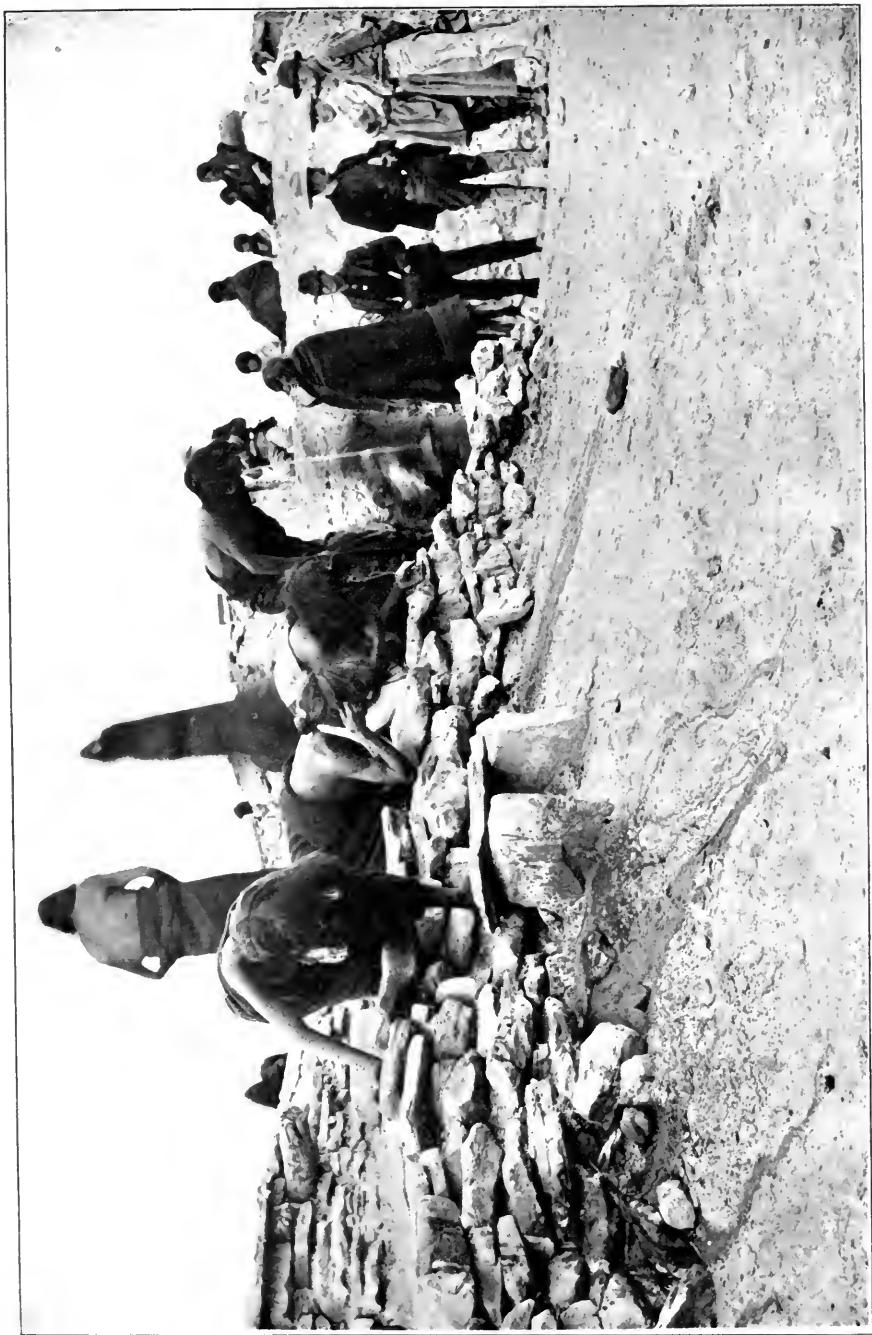


Photo by Sumner W. Matteson



having re-entered their kíva after the public performance, divest themselves of their costumes, wash off their paint, and then most of them usually do some smoking until food is brought to the kíva by their families, of which all partake. The chief priest takes down the rest of the altar and wraps up the altar paraphernalia, which he takes to the ancestral home of the Spider Woman clan later in the evening, where they remain until the next winter ceremony, about a year and a half later.

### THE SNAKE LEGEND.

There is a place north of but far away from Oráibi that is named Tokóonavi.<sup>1</sup> At that place lived some people a long time ago, but we do not know of what clan they were. They lived close to Picicva (the Grand Cañon). One young man often sat at the bank of the river and thought and thought whither all that water was flowing and whether people lived at the place whither it was flowing. "I will go and see about it, anyway," he said, and told his father so. His father consented. They made a box (boat), and the father made many báhos and nakwákrosis, some of which he stained red. He also made one long chochókpi (single black báho). When all was ready they placed the young man in the box, also some food and the prayer offerings, and then closed the box, leaving only a small hole open. They then pushed the box into the river and it floated down stream. Whenever it would run against the bank, the young man would put the long chochókpi through the hole and push the boat into the stream again. After a while he came to a place where the river widened very much. His boat ran ashore and he could not get it afloat any more. So he opened it, got out, and saw that there was land, and also much water—the ocean. He also found many people living there. At one place he saw a hill out in the water. That was the house of Hurrúing Wúhti, the deity of such hard substances as beads, shells, coral, turquoise, etc. Presently a maiden approached him that was very pretty. She told him that they had heard of his coming and were glad that he had come, and invited him to follow her to their house. They entered a báhtüwo, "water shield" (a flat round boat), and rowed to a hill in the ocean, that was clear and transparent, where there was a kíva (underground room), from which a ladder was protruding. Here were assembled the Snake men, who hung down their heads when the two entered; occasionally they raised their heads, but drooped them again. Finally the boy gave them some báhos and nakwákrosis. Then they

<sup>1</sup> Probably the Navajo Mountains.

were very happy and placed the prayer offerings on their altar. They recognized some of the báhos as having been made for Kóhkang Wuhti (Spider Woman), and told the young man to take them to her house.

The man remained there over night, sleeping with the maiden that had received him. During the night the men all turned into rattlesnakes. When the young man awoke they told him not to be afraid. All then went out—the young man, too—to drink (inhale) the morning light. When they returned to the kíva they were men again.<sup>1</sup>

Hereupon the maiden took the young man, who was now considered to be her husband, to the house of Hurrúing Wuhti (one variant says Kóhkang Wúhti), and then returned to her kíva.

In Hurrúing Wúhti's house he found a pretty maiden and also the altar of the Blue Flute<sup>2</sup> Society. On the ladder, leading into the house, was fastened a nátsi (society emblem) and also a turtle rattle. The woman asked the young man the object of his errand and he told her about it and then gave her some báhos, explaining to her what they were for. One báho was also for the sun. She asked him whether the sun was low, to which he replied in the affirmative. She then put him into another room, as something "very living" was coming, as she put it. Presently the turtle rattle on the ladder rattled and the Sun came rushing down in the form of a handsome young man, beautifully painted and dressed up as the Flute players at the Flute ceremony are painted and dressed at the present day. (See Pl. 219.) He held before him the sun and prayer offerings that he had collected from the good people as he passed over the earth in his left hand, those gathered from the bad people in his right hand. The latter he threw into the fire; the first, he handed to Hurrúing Wúhti, who placed them on the altar. The good ones asked for old age, good crops, rain, etc., the bad for opportunities to have intercourse with women, etc.

Presently the Sun Man asked the woman whether she had anybody hidden in her house, saying that he smelled the presence of some one. She admitted that she had, and called the young man out of his room. He at once gave some báhos to the Sun, which had been especially prepared for him. The latter then invited the young man to accompany him on his course around the earth. They descended into an opening behind the altar and then sped on under the earth towards the

<sup>1</sup>One variant has it that they remained snakes that day and the following night.

<sup>2</sup>There is undoubtedly a confusion here in the narrative as given by the different informants. The Blue Flute cult was brought to Oráibi by the Spider clan, who consider Spider Woman to be their clan deity. Hurrúing Wuhti has nothing to do directly with this cult. So the correct version and solution of the confusion undoubtedly is, that the young man saw the Flute altar in the house of Spider Woman, but had the experience with the Sun, and received the beads in the house of Hurrúing Wúhti. In the Snake narrative on the other mesas both deities are mentioned.



**PL. CCXIX.**

Two Flute priests in full costume.



Photo by G. Wharton James.



east, lighting the people on the other side of the earth and again gathering their prayers. At the east, where they arrived towards evening, were many suns, that change about in making the circuit around the earth. One version adds They also met first the Blue and then the Drab Flutes, who had altars and played on flutes here. They stayed over night here. Towards morning some one<sup>1</sup> lifted up a lálatayo (a grayish fox) and the qöyángwunuptu (white dawn) arose. Soon he lifted up a sikáhtayo (yellow fox) and at once the sikángwunuptu (yellow dawn) appeared, and then the sun prepared to depart (rise) again. This time the same sun rose that had brought the young man. The sun took the latter on his back and traveled the whole day, receiving prayers—the good ones during the morning, the bad ones towards evening, arriving at the house of Hurrúing Wúhti in the evening.<sup>2</sup> Having disposed of the prayer offerings as the evening before, the sun again descended through the opening behind the altar and went on his course. The young man stayed over night with Hurrúing Wúhti, sleeping with her at her request. She had many beads—white, red, and turquoise—wound around her arms.

In the morning the young man found that she had turned into an old hag. He then said he wanted to leave (according to one version he stayed in all four nights). She gave him two (some say one) of all kinds of beads and also seeds of corn, melons, etc., and tied everything up in a sack, charging him not to open it until on the fourth day after his arrival at his home. She also charged him not to sleep with his wife, the Snake maiden, while on the way. She then gave him some medicine to spurt on the water and a road would be there from her house to the Snake kíva, where he wanted to go. So he left.

On the way he encountered successively, a large wolf, panther, and snake; the name of the fourth animal my informant had forgotten, nor does he know whether the order given is the correct one. He subdued them all with the medicine and entered the kíva. The Snake chief then told him all about the Snake cult, showed him how to pre-

<sup>1</sup> According to other Hopi traditions the Drab Flute Order has come from where the sun rises (from the east); the Blue Flute Society from where the sun sets (from the west). The society emblem of the first is a yellow fox (sikáhtayo) skin, symbolizing the yellow dawn; that of the Blue Flutes is a grayish fox (lálatayo) skin, symbolizing the white dawn. Both societies put up these emblems outside at their nine-day ceremonies. Tradition also says that the Flute cult is still continued at those places, and that the priests put up these emblems as mentioned in the snake legend, but instead of skins they use the live animals.

<sup>2</sup> One variant says that the young man did not go with the sun the first time, but remained with Hurrúing Wúhti and slept with her that night. In the morning he found her turned into an old hag. They both sat in her house all day. When the sun again arrived in the evening his arms were full of blood, and he said that the people on earth had been fighting, some of them wanting another sun. He had taken part in the strife, and had slain many people. Having deposited the good and thrown away the bad prayers, he washed off the blood and then went on his course again, disappearing through the opening behind the altar.

pare the altar, taught him the songs, etc. He also told him that they should have races for the young people and prepare some joy for the children. Hence, my informant adds, they now have the races and wrangles for the corn-stalks in connection with the snake races. The Snake chief also told the young man that there they raced while it was raining.

So they departed.<sup>1</sup> On the way the beads increased in the sack. The man wanted to approach his wife on the way, but she compelled him to respect the injunctions of Hurrúing Wúhti, which had been repeated by the Snake priests. Having reached the home of the man's people, the sack with the beads was put into an inner room. The maiden ground corn four days, and on the morning of the fourth day their hair was washed and she was married in the Hopi's way to the young man. They then also opened the sack and found that it was entirely filled with beads, turquoise ear pendants, etc. They also went out, and after the young man's mother had washed their heads and it rained (the rain coming from Picfcva), the rain also washed their heads.<sup>2</sup> The contents of the sack they distributed among their friends, who were very happy over the beads. The young woman then always prepared food for the people. Her husband's father and friends made the bridal costume for her. When it was done, she went to offer a prayer (*kúivato*) to the Dawn, but she did not return to her parents' house as is now the custom.

These two were then the Snake people, the man being the Snake chief. The woman by and by gave birth to young rattlesnakes. They laid them on some sand to dry. The grandfather often took them in his blanket and carried them around, showing them to the people in the houses and kivas, because he loved them. They grew up and became Hopis, but bit the children of the other people so that they died. So the people got angry and drove them away. They first traveled in a south-westerly direction, sometimes staying days at a place, sometimes for a year, having their Snake ceremony, planting and raising a crop for their subsistence. Thus they came to the Little Colorado River and followed it in a south-easterly direction. Here one of the women was about to be confined. But they proceeded when the child was only partly born, from which she afterwards received the name Tfukuiwuhti (woman with the protruding child). She begged to be

<sup>1</sup> The version that speaks of two maidens, says that they all three went up the Grand Cañon in a báhtúwo (water shield), and also that the two maidens got the young man from the house of Hurrúing Wúhti, not saying anything either about making a road to the Snake kiva nor about the wild beasts.

<sup>2</sup> At a Hopi marriage the heads of the young people are washed by their respective mothers-in-law, and also usually their bodies are bathed, whereupon they make a prayer offering to the dawn and the sun. (See Oráibi Marriage Customs, by H. R. Voth.)

left behind, and they left her; later some of them returned, but found that the child had never been born. Whether they found the woman, tradition does not say. But it says she is still there, wandering about, dressed in a white ówa (bridal robe), or according to others, in a white, large antelope skin.<sup>1</sup>

The Snake clan then came to Oráibi and asked to be admitted to the village, but the village chief, according to one version, refused them admittance, whereupon they moved to Wálpi. Another version says that they remained in Oráibi.

### THE SNAKE ANTIDOTE.

Two of the questions most frequently asked by those who visit the snake ceremony or hear about it are: (1) Do the snakes ever bite the people? (2) If snake bites occur, do the people possess a remedy against the poison?

As to the first question, it is certainly astonishing that not more snake bites occur than is really the case, especially in the snake ceremony, where so many reptiles are handled in so many different ways, and often by young, inexperienced boys. But the author is personally acquainted with several persons in different villages still living, and has heard of others (now dead) who were bitten, either during the snake ceremony or on other occasions. More will be said about this anon.

Regarding the second question, much has been written about an antidote, which is said to be known by very few in the tribe only, etc., and strong efforts have been made by whites to discover this secret. If any one has been successful, I have failed to hear about it.

The antidote used in Oráibi was revealed to the author by a snake priest some years ago. He has since then had this information corroborated by several others, has obtained the herbs and had them scientifically identified; and the only reason why the results of these researches

<sup>1</sup> Several Hopis claim to have seen her when hunting on the Little Colorado River. They see her campfire, hear her long-drawn moans, see the horses being frightened at her approach, but when looking for the places where they have seen her fire or for her foot-tracks they can never find anything. She is considered to be the deity of game, and some say also of children, and in many ceremonies prayer offerings are made for her. It is said that a young man from Shipaulovi once saw her while hunting alone near the Colorado River. Her face and the front part of her body were all bloody. He was so frightened that he became rigid, whereupon the woman had sexual intercourse with him. When he revived again the front part of his body was full of blood. He ran and came upon one of his companions. Both then looked for the woman, but could find no trace of her except a few footprints for a short distance. But it is claimed that ever afterward that man was a marvelously successful hunter.

In Wálpi the cult of or for this deity finds expression in the appearance of a personage dressed in a large buckskin at certain ceremonies. My informant says that this personage gets into the houses or kivas unobserved, even if the doors of the houses are closed. Her presence is only detected when she begins to moan. She is also known as Tüwipongtumci (Sand-Altar-Clan-Sister).

have not yet been published is the delay which has been caused by various circumstances in the publication of this paper.

Repeated mention has been made in the course of this paper of the herb hohóyaonga (*Physaria Newberryi*), which is used during the ceremony, but more as a charm than as a "medicine." This herb is also used in case of a snake bite, but in the same manner, it seems, as in the ceremony; i.e., not so much as a drug, but rather as a charm. Another remedy used is the so-called prayer-beetle or tumble-bug (*Asida rimata*), in Hopi hohóyaowu, from which the above-mentioned herb derives its name. This beetle is either eaten raw or it is cooked in water and the liquid administered. Neither of these two remedies is considered to be a secret, and almost any Hopi, when asked what remedy they use in case of a snake bite, will mention them. But usually they will add that there are others which, however, are known to the Snake Society only.

The secret antidote consists of a decoction made of two herbs: Masí (gray) láchi (*Suaeda Torreyana Watson*) and pivánnga: weasel, medicine (*linum rigidum Pursh*), one of the so-called yellow foxes, both of which I have had in my possession for several years, and since being acquainted with them have collected myself.<sup>1</sup>

While it is true that only comparatively few Hopis are aware of the fact that these well-known and common herbs are the jealously guarded snake antidote, the statement, sometimes seen in print, that only the chief priest or only one woman in the tribe, besides the Snake priest, knows this secret is certainly erroneous. I have good reasons to believe that at least all the older members of the Snake Fraternity are acquainted with it.

The names of the herbs were first given me by one of the older members of the Snake Society, whom I had befriended on various occasions. He also brought me the herbs and referred me to an old priest, of whom he knew that he had gathered the plants on various occasions. He begged me, however, not to mention his name to any one. When later, on one occasion, this old priest related and explained to me a number of facts concerning a certain ceremony, I turned the conversation on the subject of the snake antidote. He stopped short and wanted to know who had told me about it. I replied that I had promised our mutual friend not to divulge his name, but that if he was really as great a friend of mine as he always claimed to be he should

<sup>1</sup> For the identification of these plants, as well as for other courtesies, I am indebted to Dr. C. F. Millspaugh, Curator of Botany of this museum. Dr. Walter Hough mentions in his paper on "The Hopi Relation to their Plant Environment" (American Anthropologist, Feb., 1897), a "mashilashi," which, however, he identifies as *solidago missouriensis Nutt.* The herb piwánnga I had also identified by Prof. F. D. Kelsey, then Professor of Botany in the college of Oberlin, Ohio, and he also called it *linum rigidum*.

tell me, as I wanted to find out whether I had been correctly informed. He hesitated, said that that was very sacred to them, and finally asked, "Must I tell you?" I repeated what I had said, and being promised that his name would not be revealed, he named the two plants already known to me. In a similar manner one of the leading men in the Snake ceremony and an old woman of the Snake Fraternity substantiated this information. In no case did I first mention the names of the plants, but led them to do so.

As to the antidotes used in the other villages, I have a number of notes on that question, and the names of several plants from different sources, but I feel that my information is not sufficiently corroborated and sifted to justify me in making positive statements. I have reasons to believe, however, that at least in some of the villages an herb—or in some cases perhaps more than one—is used for each of the six cardinal points, the colors of the blossoms corresponding to the colors for the different world quarters. I hope to be able to settle this question more definitely this summer.

The following two facts I record for what they are worth at present: (1) On one occasion I questioned the Snake chief of another village, who visited me, on the snake antidote. He at first refused to give me the desired information, saying that that was so sacred that he could not reveal it. Finally, I held a bunch of each of the plants used in Oráibi before his eyes. He first stared at me, and then asked, "Where did you get that?" and then admitted that they used those herbs too, but claimed that they used them in connection with others; (2) A similar experience I had once with Kopeli, the Snake chief of Wálpi, who died a few years ago, only he did not commit himself as far as the other man. After repeated efforts to induce him to tell me what he used against snake bites, I intimated that I believed I knew it, and that I had in my possession at least the plants used in Oráibi. He challenged me to produce them. I did so. He said in a half-joking manner, which seemed to say, "No, I say, but yes, I mean," that they did not use these, but the very manner in which he said it, and the fact that he then became serious and asked me not to show these plants to any one nor to reveal their names, led me to suspect that these two plants form at least a part of the antidote used in Wálpi. But this is not to be considered as a statement of a fact, but only as a clue to further investigation in the other villages.

In case of a snake bite the manner of proceeding is as follows, although it may vary in detail in the different cases, according to the attendant circumstances—the place where it occurs, the quick access to this or that remedy, the opportunity to call the Snake chief, etc.

One of the first steps usually taken is to suck out the wound, which, it is said, is more efficacious if done by a youth or unmarried man. If the snake can be captured it is killed and cut open, in order to find the blood which the reptile is supposed to have extracted from the wound and which, it is said, may be found in the snake in the form of a dark coagulated clot.<sup>1</sup> If found, it is not taken out, but the body of the snake is pressed and stroked in such a manner that the clot is worked upward and back through the mouth again. If that can be done it greatly increases the chances of the patient to recover. Another of the very first steps taken, especially if the bite occurs away from the village, is to hunt some of the beetles already named, which the victim eats raw. One of my Oráibi friends, who was bitten by a rattlesnake when a young man, has told me repeatedly that others, who happened to be close by, quickly gathered a number of these beetles, which he ate, but he shudders when he speaks about it, and says they tasted very bitter. Sometimes they are also cooked in water and the liquid is drunk by the patient.

At the very earliest moment the Snake chief is notified, or if he be absent, one of the older men of the Snake Fraternity, who at once either sends some one or goes himself after the snake medicine. The patient is taken to an uninhabited house, or if such be not obtainable, to some kíva, the kívas being mostly vacant during the season of the year when snake bites are most likely to occur. Care is taken that the sick person be seen by as few people as possible, and that he be taken from the sunlight as quickly as it can be done. When once in the kíva or house, the treatment begins in earnest. The Snake chief takes care of him. Among other things, I believe, he chants the same snake discharming song over him which is chanted at the conclusion of the snake ceremony, and which he also sings over any case of swelling which is believed to have been caused by the snake charm. As soon as the herbs for the snake antidote arrive, they are turned over to a woman of the Snake clan, who has either never had any or has ceased to bear children. She prepares the decoction which the patient has to drink, with which he is rubbed, and especially with which the wound is washed out. For three days he is not allowed to drink anything but this decoction, nor to eat any food except what has been prepared with this medicine. Even the dough for the usual bread (*piki*) is prepared with it. I have been told that this "diet" becomes so obnoxious to the patient that frequent and profuse vomiting takes place. And it is more than probable that the efficacy of the medicine

<sup>1</sup> An old German minister told me lately that in a certain part in Germany in case of a snake bite the snake was killed, and the "heart" of it—as the popular belief was—taken out and laid on the wound, which was then tied up.

lies more in the fact that the whole system of the patient is so thoroughly saturated with it, than in the medical properties of the plants as such.

For three days the patient is not permitted to associate with any one except those who treat him and take care of him; generally, I believe, only the Snake priest and the woman who prepares the food. On the fourth day he washes his head in suds, made of water and crushed roots of the yucca plant, whereupon he returns to his home.

There seems to be a deep-rooted conviction among the members of the Snake and Antelope Fraternities that they are immune from the effects of snake poison and from the snake charm while they are engaged in the ceremony. One of the Snake priests, now an old man, was once struck by a rattler while he ran with handfuls of snakes from the plaza at the conclusion of the ceremony. He says he held the snake about midway of the body, and it swung back its head and struck him in the hand. A young man was bitten on the plaza a few years ago, which, however, I did not find out until lately. A third man told me that he was once bitten—I think he said while trying to take a snake from the pot in the booth. It has already been stated on a previous page that formerly the snakes were kept in a covered pot instead of a sack on the plaza. In none of these cases was any special treatment resorted to, because, I was told, that was not considered necessary in the case of members of the Fraternity during the time of the ceremony. Of course such immunity is claimed only for those whose "hearts are good"; where this essential quality does not exist the bite of a venomous reptile may prove just as dangerous, and even fatal, as in the case of any other mortal.

At any other time except during the ceremonial days the members of the Antelope and Snake Fraternity seem to be just as much afraid of a rattlesnake as other people. On several occasions it so happened that a member of the Snake Fraternity was near by when a rattlesnake was found near the mission.<sup>1</sup> I challenged them to pick

<sup>1</sup> I have frequently been asked whether in view of the fact that the Hopi kill so few snakes the country around the village does not abound in them. I do not think that there are more snakes there than we found for instance in Kansas when we settled there in 1874. Still we generally kill from four to six rattlers close to the mission house nearly every summer. And in order to show that a rattlesnake does not strike very quickly I may cite a few special cases. One time our little boy, then about two years old, had been playing near a bush, when all at once a rattler crawled away only a few feet from the child. On another occasion my wife stepped over some dry weeds near the house, and almost on two rattlesnakes that were lying there partly coiled up. At another time our daughter stepped through the door from the house, the threshold being about six or eight inches from the ground. The little boy about two years old followed her, putting one foot after the other very slowly over the threshold. I followed immediately after, and turning around saw a rattlesnake completely coiled up, apparently ready to strike, not more than one inch from the place where the feet of the little fellow had touched the ground. Had he touched the reptile the latter would in all probability have struck. It is a well-known fact among people who have had some experience with rattlesnakes that they will, as a rule, give timely warning with their eyókingpi (bell), as the Hopis call the rattles,

it up, which they very emphatically refused to do, saying that if they touched a snake while they (the Snake Fraternity) were not "assembled" they were just as liable to be bitten as any other person. On one occasion I requested an Antelope priest to pick up a rattler, which he very positively refused. I then struck the snake a blow, picked it up, and followed my friend with it. He kept at a respectful distance and when I began to run after him and to throw the reptile after him, he dashed away and screamed, evidently in genuine fear, crawled through under a wire fence, and ran away as fast as his legs would carry him, for fear of being influenced by the pernicious charm of the snake.

whenever they have time to do so; or they will try to escape rather than to fight where they have their choice, and even when coiled up and cornered they will be slow to strike the fatal blow. I have repeatedly provoked a rattlesnake, caused him to coil up, touched him with some object, and have been astonished how slow he is to strike. Of course, these facts notwithstanding, it would not be safe to trust him too far. When I was in charge of an Indian boarding school in Oklahoma a little boy, while playing with others, ran towards a haystack, stooped down to pick up a corncob, was struck by a rattler, and died after fourteen hours. It was late in the fall, and the Indians there claimed that the vision of the snakes was getting to be dim at that time of the year, and hence they would strike more readily than if they could see well.

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P. S. It has been mentioned in this paper (see page 310) that thus far no songs of the Snake Ceremony had been obtained. But since that was written the author has succeeded to obtain for the Museum, by the use of a phonograph, many Hopi songs, and among them several! Snake songs, prayers, etc., which will in all probability be published in connection with other songs. THE AUTHOR. 3